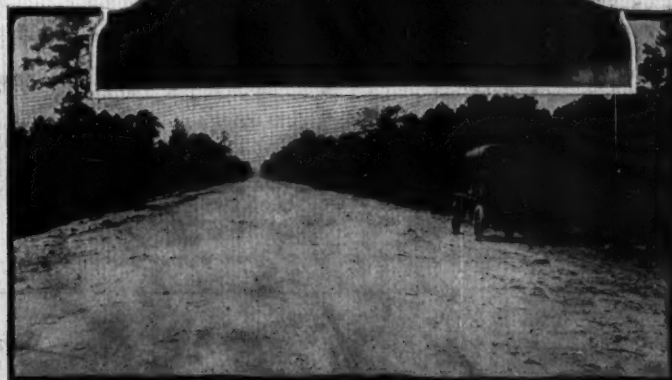


MOTOR AGE

EYES OF MOTOR WORLD ON SAVANNAH

SAVANNAH, Ga., Nov. 19—Special telegram—One week from today the second big road carnival this year of the Savannah Automobile Club will be inaugurated, the curtain-raiser being the small car race which will be run next Wednesday, over a 10-mile circuit, which will give a distance of 200 miles, while the following day, starting at 9 o'clock in the morning, the international battle for the grand prize trophy of the Automobile Club of America will take place over a 25.13-mile circuit. In this big event the cars will go 402 miles. Seventeen cars are nominated for the small race and twenty will go to the tape in the American grand prix, as the Thanksgiving day event has been styled. A more brilliant field of drivers would be hard to find than the one nominated for the long grind. The roster shows such brilliant pilots as Nazzaro, Wagner, Duray, Hemery, Cagno, Erle, Harriot, Fournier, Hautvast, Rigal, Szisz and Pianeza among the foreigners. Strang and de Palma are Americans but are in European cars, while the Yankee contingent numbers Michener, Burman, Haupt, Zengle and Harding. Of course the small car race has not so many stars, but among those who will strive for glory will be George Robertson, winner of the Vanderbilt, who will pilot the French Gregoire. His greatest rival, Lytle, was to have been in an Italia, but the poor chap is ill with typhoid fever at his home in Toledo and is out of it. There is talk of Al Poole taking his place in the Isotta, but it may be an amateur, not named so far, that will be Lytle's substitute.

As to the speed that will be made in the big race, all is conjecture so far. The most optimistic talk of 72 miles an hour, but when it is remembered that the turns average about one to the mile, this seems hardly probable. True, the turns are banked to a speed of 60 miles an hour, it is claimed, but even so, a slowing to this pace



On the left of the trophy is a view of Ferguson avenue looking north; on the right, Waters road; in lower left, Ferguson avenue before it was improved; under the trophy, as Ferguson avenue looks now that it has been converted into a modern highway.



so many times means that one the straights the huge cars will have to reach terrifying speeds to come anywhere near a high average like the one predicted. A fairly good line on the pace was had Monday, when Duray, in the de Dietrich, made a single circuit in 22:12, which is at the rate of 69 miles an hour.

Preparing for the Carnival

Savannah, Ga., Nov. 17—With the arrival in Savannah last Thursday of the contest committee of the Automobile Club of America the last lap of the preparations for the American grand prix, which will be run Thanksgiving day, was begun. Since the arrival of the committee its members have been busied with the details of the race, and have worked with such good effect that the race could have been run Monday, when the racing machines were given the course, protected by 150 flagmen and special guards, for their final 8 days of preparation for the races. The flagmen and guards go on the

course at 11 o'clock, protecting the turns and the parts of the course which runs through the populated districts. By common consent the road is left free for the drivers during the practice hours, and the conditions are practically the same as will prevail in the races. No chances will be taken, however, on the race days themselves, as Governor Hoke Smith of Georgia will proclaim martial law over the roads of the course and the national guard of the state, some 900 strong, will give the drivers no chance to complain of the crowds. From 11 o'clock until 12:30 the course is open to the light cars, which are flagged at the latter hour and leave the course. Half an hour later the heavy cars, which will compete in the American grand prix, are given the track and hold it until 4 o'clock, after which the roads are again thrown open to traffic.

Practice in the middle of the day is somewhat of an innovation to the drivers who are accustomed as a rule to begin

their work at dawn and get away before the roads are needed for business. International signals are used on the course. They are already in place. Practically every car and driver entered is on the ground. A group picture of the drivers would show practically every notable steersman on both sides of the water with the exception of Lytle, who is reported ill with typhoid fever in Toledo, and will hardly be able to drive in Isotta in the light car race.

Extraordinary care has been taken by the local club in banking the numerous turns of the course. The Savannahians were somewhat surprised to find when the foreign drivers got on the course they refused to wax enthusiastic about them. On an explanation being sought it developed that the foreigners took the banked turns as a reflection on their skill as drivers. Later when they became accustomed to the turns and the possibilities of sustaining speed on them they made up in extra enthusiasm what they had lacked before. The drivers unite in saying that a speed of 60 miles or better can be sustained on most of the banked turns, and agree that the winner of the race will have to do better than 70 miles an hour for the entire time of the race.

Ten Cars Will Finish

It has been announced that ten cars will be allowed to finish. Following this decision there was some difference of opinion between the officials of the A. C. A. and the local club as to the hour for starting the big race. The New Yorkers wanted the race started at 8:30 o'clock in the morning for fear dusk might interfere with some of the last cars finishing. The Savannahians wanted the race to start an hour later so the people who came in to see the race by the morning trains could get settled in their places on the stands in time for the start. A compromise was finally arrived at by which the



BANKED TURN—A AND B INDICATE SQUARE TURN, C BANKED TURN



DURAY

CAGNO

HAUTVAST

PIACENZA

RIGAL

race will start at 9 o'clock in the morning. The light car race on the day before Thanksgiving day will begin at 11 o'clock.

Many judges have been appointed to look out for the fair running of the races. A sufficient number has been named so that they may be placed about the course. They will be expected to assist the referee by reporting on such cases as may be requested of them.

Officials of the Meet

William K. Vanderbilt, who was asked to referee the races, has been obliged to decline on account of ill health. Robert Lee Morrell has been chosen to referee the contests. The complete list of officials is as follows:

Contest committee of the Automobile Club of America—Robert Lee Morrell, chairman; A. H. Whiting, Harry S. Houpt, H. H. Law, S. M. Butler, E. R. Hollander, S. B. Stevens, H. C. Pearson; Massachusetts Automobile Club, H. T. Clinton, secretary.

Referee—Robert Lee Morrell.

Honorary referees—Hoke Smith, governor of Georgia; Joseph M. Brown, governor-elect of Georgia; George W. Tiedeman, mayor of Savannah; Frank C. Battey, president of the Savannah Automobile Club; Harvey Granger, chairman course committee Savannah Automobile Club; R. J. Davant, chairman executive committee Savannah Automobile Club; E. H. Gary, president Automobile Club of America; Henry Sanderson, vice president Automobile Club of America; Jefferson deMont Thompson, chairman racing board A. A. A.

Judges—Harlan W. Whipple, John E. Roosevelt, E. E. Schwarzkopf, John Gerrie, E. H. Hearne, Ruben Butler, E. V. Hartford, Guy Howard, Wilkie Brown, A. R. Pardington, F. A. D. Pardington, F. A. D. Hancock, Walter Allen, Peter Fogarty, Lee Butler, E. N. Cornwell, F. X. Courteney, George W. Allen, Herman Halstead, and the field officers and staff of the First Regiment of Georgia Volunteers and the Savannah Volunteer Guards.

Honorary judges—Walter G. Charlton, judge of the superior court; Davis Freeman, judge of the city court; Henry McAlpin, judge of the court of ordinary; Paul E. Seabrook, judge of the Atlantic circuit; John E. Schwarz, judge of the recorder's court.

Military commander—Major William B. Stephens, Savannah Volunteer Guards.

Engineer—W. F. Brown.

Superintendent of arrangements—N. H. Van Sicken.

Technical committee of the Automobile Club of America—Henry Souther, chairman; M. A. Newand, Allen McMurtry, Henry Ford and Charles G. Curtis.

Inspectors—Theodore E. Steinway, William R. Steinway, H. R. Leiding, James Rourke, R. R. Oakman, George L. Kearne, Monroe R. Roth-

child, Charles G. Wilkinson, H. H. Gaines and W. P. Berrien.

Surgical staff—Dr. Thomas G. Charlton, chief surgeon; Dr. Louis N. Lanehart, Dr. Samuel Park and the surgical committee of the Savannah Automobile Club.

Timers—S. M. Butler, chairman, A. C. of A.; New York Timers' Club, Lieutenant Philip A. Sayles, George McGraham, W. J. Donlan, Charles E. Ferry, A. L. McMurtry, W. F. Jones, S. E. Theus, S. A. C.

Starter—F. J. Wagner.

Clerk of the course—H. T. Clinton.

Assistants to clerk of the course—E. C. J. McShane, A. Howell.

Press committee—Thomas F. Moore, chairman; W. J. Donlan.

Announcers—John S. Banks, R. C. Thompson.

Military guard—Savannah Volunteer Guards, four companies; Georgia Hussars, German Volunteers, Chatham Artillery, First Cavalry, National Guard of Georgia, Irish Jasper Greens, Emmett Rifles, Republican Blues, Savannah Cadets, and the Oglethorpe Light Infantry, the last five companies named comprising the five companies of the First Infantry of the National Guard of Georgia.

An elaborate telephone system is being constructed around the course which will be used in keeping the grand stand in touch with the progress of the race, and by the different entrants to keep tab on the progress of their cars and to direct the driv-

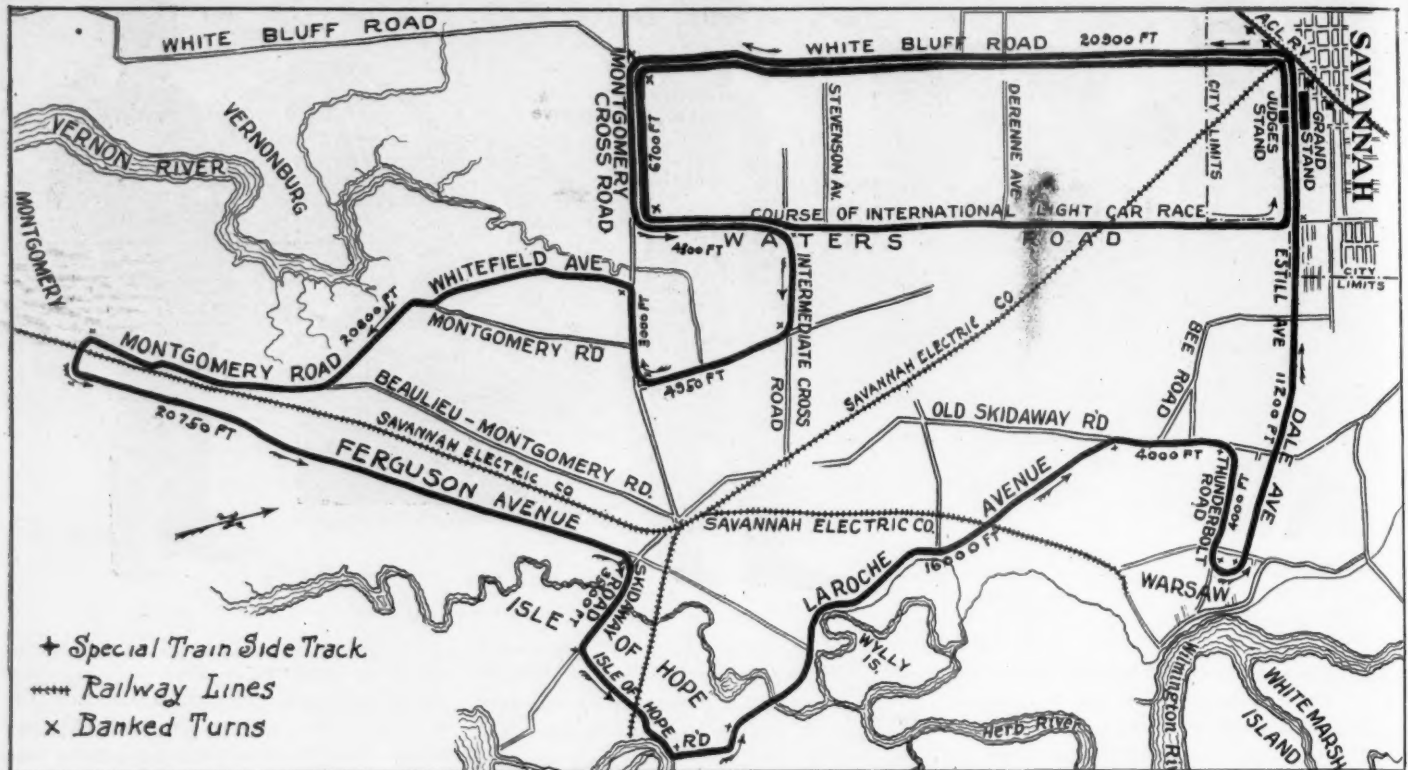
ers from signaling points as to the tactics to be employed. The grand stand already completed has a capacity of 16,000 persons. More than half the seats have been sold already.

Press Conveniences Good

Special attention will be paid to the convenience of the representatives of the press in the arrangements for the race. The press stand has been constructed quartering up the stretch so each newspaper man can note the cars approach as far as they can be seen without moving from his seat. The telephone system will be cut into the press box and two operators will keep the newspaper men informed of the happenings on the back stretches by this means. Eighteen Western Union and Postal telegraph operators will be provided in the back portion of the stand so dispatches can be handed them by the corre-



BEAUTIFUL STRETCH ON THE AVENUE OF PALMS



MAP OF TWO COURSES THAT WILL BE USED AT SAVANNAH NEXT WEEK

spondents without the latter moving from their tables. Some of the correspondents are on the ground already, and making use of the newspaper headquarters which have been furnished them up-town with special wires to the telegraph offices, and other conveniences.

In addition to the number of distinguished guests shown on the list of honorary officials, the president and president-elect of the United States, the members of the cabinet, the treasurer of the United States, Governor Hughes, of New York, and others have been invited. Representatives will be present at the races from the motor clubs of France, Italy, Germany, Sweden and England.

The camps with the exception of the Chadwick, which is located at the police barracks, are around the course, and for the most part at the resorts on the salt water. This is the height of the oyster

and terrapin season, and the drivers are in many cases having their first introduction to the dishes of the southland and living oysters, turtle soup, terrapin stew and other sea foods.

Last Week at Savannah

Savannah, Ga., Nov. 12—With the races 2 weeks off the drivers and cars for the light car and grand prize races are coming in on every train and boat that touches Savannah. Yesterday Chairman Morrell and his associates of the A. C. A. arrived in the city. Along with them came Fred Wagner, who will start the racers. Starting last Monday the cars were given the right of way on the course from noon until 3 p. m. and every driver who is to take part in either of the races is on the road during that time every day.

The course, which is regarded as the best in the country, and which has been

declared by every driver that has hit Savannah to be the fastest they ever traveled on, is being worked by convicts, and nearly every one is sure of maintaining a record pace next week. During last week the course was oiled both day and night.

Among the drivers and managers already here are: Manager Whittimore and drivers Alexandre Cagno and Giovanna Piacenza, of the Italy team; Manager Willis B. Troy and drivers Arthur Duray, Victor Rigal and Lucien Hautvast, of the Clement-Bayard and de Dietrich team; Manager Newmain and drivers Victor Hemery, Rene Hannriot and Fritz Erle, of the Benz crew; Manager David Bruce-Brown and drivers Louis Wagner, Felice Nazzaro and Ralph de Palma, of the Fiat team, and Driver Seymour, of the Simplex.

Pennants ordered by the Savannah Automobile Club are now seen on all sides

MECHANICAL FEATURES OF THE ENTRANTS IN THE SMALL CAR RACE AT SAVANNAH

No.	Car	No. of Cyl.	H. P.	Bore and Stroke	Wheel Base	Size of Tires	Ignition	Clutch	Trans- mission	Speeds	Final Drive	Magneto	Carburetor	Driver
1	S. P. O.	4	18	5 3/4 x 5 1/2	100	32x4	Jump spark	Cone	Selective	3	Shaft	Bosch	S. P. O.	Juhaz
2	Lancia	4	12-18	3 1/2 x 4	100	32x3 1/2	H. T. magneto	Steel disk	Selective	4	Shaft	Bosch	Lancia	Hilliard
3	Chalmers-Detroit	4	30	3 3/4 x 4 1/2	100	32x3 1/2	Jump spark	Multiple disk	Selective	3	Shaft	Bosch	Mayer	Bergdall
4	American Aristocrat	4	22 1/2	3 3/4 x 4	88	32x3	H. T. magneto	Cone	Selective	3	Shaft	Remy	Breeze	Manville
5	Cameron	4	10-14	2 1/2 x 3	82	28x3 1/2	H. T. magneto	Multiple disk	Selective	3	Shaft	Bosch	I. F.	Cameron
6	Isotta	4	16	4 x 5 1/2	102	32x3 1/2	H. T. magneto	Cone	Selective	3	Shaft	Bosch	Maxwell	Lytle
7	Gregoire	4	18	3 3/4 x 3 3/4	88	30x3 1/2	Jump spark	Cone	Planetary	2	Shaft	Bosch	Schebler	Robertson
8	Bulck	4	20	5x5	96	30x3 1/2	Jump spark	Multiple disk	Sliding	3	Shaft	Bosch	Maxwell	Burman
9	Maxwell	4	30	3 3/4 x 4 1/2	100	32x3 1/2	Jump spark	Multiple disk	Selective	3	Shaft	Bosch	Mayer	See
10	Chalmers-Detroit	4	18	3 3/4 x 3 3/4	88	30x3 1/2	Jump spark	Cone	Planetary	2	Shaft	Bosch	Schebler	Lawrence
11	Bulck	4	14	4 1/2 x 4	84	30	Jump spark	Multiple disk	Planetary	2	Shaft	Bosch	Maxwell	Hearne
12	Maxwell	4	30	3 3/4 x 4 1/2	100	32x3 1/2	Jump spark	Multiple disk	Selective	3	Shaft	Bosch	Maxwell	Costello
13	Chalmers-Detroit	4	18	3 3/4 x 3 3/4	88	30x3 1/2	Jump spark	Cone	Planetary	2	Shaft	Bosch	Mayer	Burns
14	Bulck	4	14	4 1/2 x 4	84	30x3	Jump spark	Multiple disk	Planetary	2	Shaft	Bosch	Schebler	Easter
15	Maxwell	4	18	3 3/4 x 3 3/4	88	30x3 1/2	Jump spark	Cone	Planetary	2	Shaft	Bosch	Maxwell	Muntwyler
16	Bulck	4	20	5x5	96	30x3 1/2	Jump spark	Multiple disk	Sliding	3	Shaft	Bosch	Schebler	Jeffers
17	Maxwell	4	30	3 3/4 x 4 1/2	100	32x3 1/2	Jump spark	Multiple disk	Selective	3	Shaft	Bosch	Maxwell	Kelsey

MECHANICAL FEATURES OF CARS THAT WILL CONTEST FOR THE GRAND PRIZE TROPHY

No.	Car	H. P.	Bore and Stroke	Wheel-base	Tire Sizes	Ignition	Clutch	Transmission	No. of Speeds	Final Drive	Absorbers	Magneto	Carburetor	Weight	Driver
1	Clement-Bayard	120	6.1x7.2	105	34x3.54 34x4.72	H.T. Magneto	Metallic Disk	Selective	4	Shaft		Bosch	Clement	2640	Rigal
2	Lozier	45	5 1/2 x 5 1/2	124	34x4 1/2 34x5	H.T. Magneto	Multiple Disk	Selective	4	Shaft	Hartford	Bosch	Schebler	2850	Michener
3	Simplex	50	6.1x5.75	124	36.02x4 36.81x5.3	H.T. Magneto	Multiple Disk	Selective	4	Double Chain	Hartford	Bosch	Simplex	2900	Seymour
4	Buick	40		115	34x4	Jump Spark Magneto	Cone	Selective	3	Shaft		Bosch	Schebler	2700	Burman
5	Chadwick six	60	5x6	112	36x4.72	H.T. Magneto		Selective	4	Double Chain	Hartford		Chadwick	2700	Haupt
6	Fiat	115	4.52x6.49		34x4.13 34x4.72	Make & Break L.T. Magneto	Multiple Disk	Selective	4	Side Chain	Hartford	Bosch	Fiat	2530	Nazzaro
7	Acme six	60	5x5	109	34x4 1/2	Storage bat. & H.T. Magneto	Cone	Selective	3	Double Chain	Hartford	Eisemann	Acme	2500	Zengle
8	Benz	110	6.1x6.4	108	34x4.72	H.T. Magneto	Cone	Selective	4	Side Chains		Bosch	Vertical Type	2695	Hemery
9	DeDie-trich	123	6.1x6.8	107	34x4.13 34x4.72	L.T. Magneto	Metallic Disk	Selective	4	Side Chains		Bosch	Vertical Type	2640	Duray
10	Renault	115	6.1x6.2	105	34x3.54 34x4.72	H.T. Magneto	Cone	Progressive	3	Shaft		Bosch	Vertical Type	2420	Szisz
11	National six	60	5x5	116	34x4 34x5	Jump Spark and Magneto	Cone	Selective	3	Shaft	Hartford	Bosch	Schebler	2540	Harding
12	Itala	120	6.10x6.29	116	34x4.13 35x5.31	Make & Break Magneto	Multiple Disk	Selective	4	Shaft	Hartford	Bosch	Itala		Cagno
13	Clement-Bayard	120	6.1x7.2	105	34x3.54 34x4.72	H.T. Magneto	Metallic Disk	Selective	4	Shaft		Bosch	Clement	2640	Hautvaast
14	Fiat	115	4.52x6.49		34x4.13 34x4.72	Make & Break L.T. Magneto	Multiple Disk	Selective	4	Side Chain	Hartford	Bosch	Fiat	2530	Wagner
15	Benz	110	6.1x6.4	108	34x4.72	H.T. Magneto	Cone	Selective	4	Side Chains		Bosch	Vert'l T'e	2695	Hanriot
16	Renault	115	6.1x6.2	105	34x3.54 34x4.72	H.T. Magneto	Cone	Progressive		Shaft		Bosch	Vert'l T'e	2420	Strang
17	Itala	120	6.10x6.29	116	34x4.13 35x5.31	Make & Break Magneto	Multiple Disk	Selective	4	Shaft	Hartford	Bosch	Itala		Fournier
18	Fiat	115	4.52x6.49		34x4.13 34x4.72	Make & Break L.T. Magneto	Multiple Disk	Selective	4	Side Chain	Hartford	Bosch	Fiat	2530	DePalma
19	Benz	110	6.1x6.4	108	34x4.72	H.T. Magneto	Cone	Selective	4	Side Chains		Bosch	Vert'l T'e	2695	Erle
20	Itala	120	6.10x6.29	116	34x4.13 35x5.31	Make & Break Magneto	Multiple Disk	Selective	4	Shaft	Hartford	Bosch	Itala		Piacenza

of the streets. The design is a handsome one. The pennant is red and has the letters "S. A. C." for Savannah Automobile Club, in red letters in the center on a white background, the latter being in the shape of a small pennant symmetricaly formed inside the large one. Every driver and mechanic is also wearing one of them.

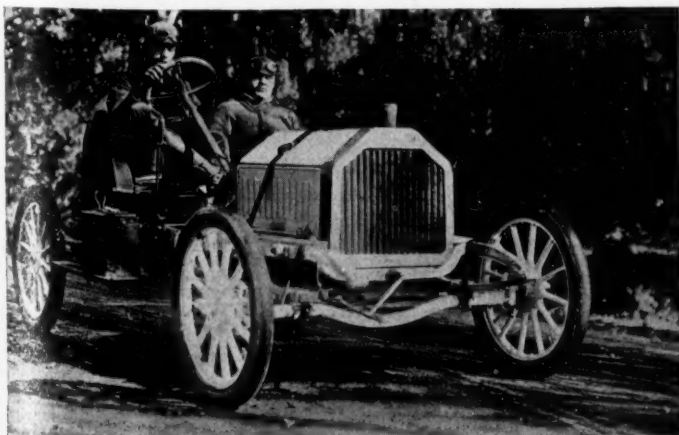
Tire men also are here, among those arriving today being Grapin, Verdouck and Mennier. Grapin is the inventor of

the Michelin demountable rim. These men were sent over by the French house to personally superintend the tire equipment on the foreign cars. Cleland, of the American Michelin factory, with a force of men will arrive in the city during the week. With him will also come Vice-President Matlack and H. Michelin, of the company. The party is established at the Harris Tire Co.'s establishment and soon will begin making arrangements for the establishing of a tire camp in front of the

grand stand and on Ferguson avenue. In a letter received from the company Steve N. Harris, of the Harris Tire Co., learned yesterday that 2,500 tires have been shipped to Savannah.

Tire Equipment of Cars

Fifteen of the cars in the grand prize race will be equipped with the Michelines. These are the three Benz, the three Fiat, the three Itala, the two Renault, the Chadwick, the Acme, the National and the Simplex.



BUICK, HEARNE DRIVING



TWO AMERICAN CARS

ACME, ZENGLE DRIVING

Presentation of Vanderbilt Cup

New York, Nov. 16—At one stage of the proceedings attendant upon the final festivities, in connection with the Vanderbilt cup race of 1908, the famous artistic silver trophy shared the same replying table with the gold cup of the 1908 grand prize race at Savannah. The incident came last Thursday night at the West Fifty-fourth street home of the Automobile Club of America, to which went a thousand and a few more to see the formal presentation of the Vanderbilt cup to the proper officials of the Locomobile Co. of America and honoring the maker and the designer, and the driver and his mechanic. The invitations were issued by the cup commission in behalf of the Locomobile company, which was the host of the occasion.

The function being in the A. C. A. clubhouse, it was an expected courtesy that President E. H. Gary should be the first speaker introduced by Russell A. Field, who pleasingly filled the post of master of ceremonies. Judge Gary congratulated the cup commission on the conduct of the race, the maker and designer upon the production of the winning car, and the driver and mechanic who were so instrumental in securing victory. "Give Americans a little longer to prepare, and they will always occupy first place," said President Gary in his speech.

William McAdoo, a former police commissioner of New York city, was the succeeding speaker, and he supplied some excellent advice, which told the motorists that when the road was clear he could utilize his speed, but recklessness should be curbed and the rights of other highway users should be recognized. Then came the presentation of the cup by Jefferson de Mont Thompson, chairman of the cup commission, who formally turned the trophy over to S. T. Davis, Jr., president of the Locomobile company. Among other things, he said:

"This is an American year. We have won the athletic championship of the world, and we have won the classic trophy, to capture which in years gone by France, Germany and Italy have spent a million dollars. It has at last fallen to the lot of an American manufacturer, an American designer, and a driver with American blood in his veins to win it."

In accepting the trophy S. T. Davis, Jr., said that the winning of the cup had been the crowning achievement of 3 years of effort. The offering of the cup was due to the patriotism of William K. Vanderbilt, Jr., and his rules were responsible for the fine material and workmanship required of cup aspirants. Mr. Davis outlined the efforts of his company to win the cup, and gave all the credit to Mr. Riker.

There were loud calls for Mr. Riker, who modestly declared that he had had



Photograph by Pictorial News Co.

FORMAL PRESENTATION OF THE VANDERBILT CUP AT THE A. C. A.

little to do with the success of the car, which was due to the material the company put in it and the skill of the workmen. Winthrop E. Scarritt, a former president of the A. C. A. and also of the A. A. A., supplied one of his customary ebullient orations. George Robertson, the pilot of the winning car, was a retiring hero, and accompanying him was John J. Hayes, winner of the Olympic Marathon race, the two 1908 international winners receiving the heartiest of receptions. A. R. Pardington, the man responsible for prevailing upon Mr. Vanderbilt to offer the cup, told of the difficulties of promoting the first road races.

Moving pictures of motoring events here and abroad were followed by a supper and a general jollification. Among the notables in the throng were the following: J. A. Kingman, Joseph Tracy, Percy Owen, S. A. Miles, H. M. Swetland, Alfred Reeves, C. R. Mabley, Harry Fostick, L. R. Perlman, W. D. Gash, Frank Eveland, Charles E. Miller, Alexander Dow, Peter Fogarty, A. W. Church, Harry Miller, Joseph Jones, Dr. J. N. Lanehart, chief surgeon of the race; Major C. J. Crowley, of the Irish brigade; H. F. Donaldson, Rene Petard, J. J. Lannin, of the Garden City hotel; H. F. Mollenhauer, J. J. Mann, of Paris; F. E. Moscovics, J. J. Woodward and M. J. Wolf.

GROWTH OF GERMAN INDUSTRY

Washington, D. C., Nov. 16—German official statistics contrasting the years 1901 and 1906 show that the motor car industry in the empire has made wonderful strides. In 1901 there existed in Germany twelve motor car factories employing 1,589 persons, while in 1906 this number had increased to thirty-four factories with 10,347 employees. In 1901 \$431,873 in wages were paid by the factories, or \$272 per workman, while in 1906 \$3,171,012 were paid for wages, or \$307 per workman. The total value of production shows nearly a tenfold increase in the 5 years. It amounted in 1901 to about \$1,340,000, and in 1906 to \$12,200,000.

President-Elect Taft Will Become a Motorist

Washington, D. C., Nov. 14—The very cheering announcement from an official source that after March 4 the motor car will be the official vehicle at the White House should prove of great interest to the motor car world. President-elect Taft, unlike President Roosevelt, is fond of riding in a motor car, on account of the ease with which it can be made ready and the speed with which it can take him anywhere he pleases to go. An officer of the war department, whose name is kept secret for certain reasons, but who is said to be well posted on motor cars, has been detailed to select two motor cars for Mr. Taft and his family for delivery after March 4. The president-elect has not signified his preference for any particular make of car, and the officer commissioned will inform motor car manufacturers the general type of car wanted and they can make bids for furnishing two of them.

The competition promises to be very lively, as this is the first time on record that a motor car will be used by a president of the United States in place of a horse-drawn vehicle; and it will not only give the manufacturer who is lucky enough to be chosen considerable prestige, but will likewise give a big boost to the motor car industry. While President Roosevelt has occasionally used motor cars, particularly during the summer seasons spent at Oyster Bay, he has consistently refrained from using them in his official capacity while in Washington. However, he violated his rule today when, in company with Mrs. Roosevelt, he used the war department's White steamer in making a quick trip to Alexandria, Va., to witness some school games in which his youngest son competed.

It will be remembered that during the recent campaign both Taft and Bryan made frequent use of motor cars, the latter especially finding them useful in jumping about the country, making connections which would have been impossible if the Democratic candidate had had to depend upon railroad train service.



Photograph by Pictorial News Co.

LOCOMOBILE VANDERBILT CUP WINNER AT FACTORY

California Enthused Over Motor Sign Boards

San Francisco, Cal., Nov. 12—The motorists of central California are rejoicing, for the day of the sign is at hand. The Automobile Club of California has taken the first step, and only recently, with appropriate ceremonies, the first post was driven bearing directions for the motorist ignorant of the roads. For years the roads of southern California have been thoroughly marked, thanks to the activity of the Automobile Club of Southern California. There is hardly a turn to be made in the southern counties that is not plainly marked by the club's road signs, and the danger spots also are marked. An absolute stranger can motor all day and know at any minute just where he is. In northern California the picture is a very different one. There is not a single official sign, and the semi-occasional country signpost has too often been the plaything of the practical joker whose idea of humor is to turn it around. The sign movement now begun by the Automobile Club of Northern California is comprehensive, and it will be pushed to the limit of the club's treasury. Radiating from San Francisco there will be strings of signs that will carry the motorist to the most frequented resorts. At the present time posts are being put up between this city and the famous Hotel Del Monte, some 150 miles down the coast on the shores of Monterey county. After this work has been completed, other localities will be cared for, and it is the hope that in time the whole of central and a good part of northern California will be thoroughly "posted."

RUNNING DOWN CANARDS

Paris, Nov. 8—Daily newspapers get hold of so many motor car accidents that never occurred, and exaggerate those that did to such an extent that the Marquis de Dion will ask the A. C. F. to vote a special fund for the control of all reported mishaps. The movement was started by a blood-curdling story which got into all the European newspapers of a high-speed car

running down a child in the presence of its father. The distracted parent picked up the body of his son, then fired revolver shots after the car, killing the driver and a beautiful girl sitting by his side. Without control the car sped on, mounted the footpath, overturned and fatally injured another woman occupant of the vehicle. On official inquiry being made the police authorities could only find one accident in the district named during a period of 6 months, on which occasion a motor car ran into a horse buggy, the people quarreled over the responsibility, one of the motorists fired his pistol in the air, but no one was either injured or killed. An accident at the Porte Maillot, Paris, in which a cyclist collided with a car and was killed was reported in the papers as being caused by the motor vehicle. The police report was to the effect that the cyclist met his death by imprudence, the car driver being blameless. Not a single paper publishing the original story would accept the correction, however. With the fund requested by the vice-president of the French club all motor accidents would be inquired into, and where incorrectly reported in the press correction would be demanded.

MINNESOTA'S LEGAL HOPES

Minneapolis, Minn., Nov. 16—The legislative committee of the Minneapolis Automobile Club and many of the more active members are busy drawing up the specifications for the new motor law which will be presented to the next Minnesota legislature. This measure will provide for several features in which all motor enthusiasts in the northwest will be interested. The principal one of these is state registration. Another important feature of the bill being drawn up will be the plan of having all owners pay a state license tax, based on the horsepower or weight of the machine. The income derived in this manner, it is intended, shall go into a fund for the use of the good roads workers in the state. This state license tax, it is proposed, will be in lieu of any personal tax against the value of the machine and will figure out from \$10 to \$75 a year.

Speed Trappers Hit Hard in East

Philadelphia, Pa., Nov. 16—A Philadelphian, with the able assistance of Barrister Edwin S. Nyce, ex-secretary of the Norristown Automobile Club, dealt a blow at the trap habit last week, from which it cannot recover for many moons, if at all. Motorists generally have long but vainly insisted that the mere fact of a numbered tag being attached to a car which had exceeded the speed limit did not necessarily imply that the owner was in the machine at the time. Magistrates throughout the state have taken it for granted and have soaked the buyer of the tag accordingly. This question came up in the case of Charles W. Bacon, a Quaker City real estate operator, whose car was reported by a trapper and who was later ordered to appear and pay up.

But Bacon is a fighter, and so is Nyce, whom he retained to handle the case, which came up in the Montgomery county court last week. Judge Weand was on the bench, and after hearing the facts threw a bombshell into the trappers' ranks by handing down the following opinion:

"The record of the justice sets forth that a motor car, No. 15775, was driven on the public road in Lower Providence township at a rate of speed exceeding that allowed by law; but there is nothing to connect the defendant with the car or the act. It is not set forth that he was the owner of the motor car or in it at the time. If he did own it, and it was used without his knowledge, orders or consent, he would not be liable; otherwise he could be sent to jail for an act done without his knowledge by persons for whose acts he would not be responsible.

"To sustain this conviction we must hold, without evidence, that he was the owner and its occupant at the time alleged, or at least that it was being used for his purpose and by his consent. A summons was issued, and the defendant appeared and made no defense. As there was no evidence connecting him with the violation of the law he was not required to make a defense. The proceedings are otherwise irregular in that the justice, after fining the defendant, required him to give bail for his appearance at court. And now, November 12, 1908, after argument and due consideration, the exceptions are sustained and proceedings set aside."

Henceforth, unless the Lower Providence township justice carries the case higher—which he will hardly do, in the face of the rebuke administered to him by Judge Weand for collecting a fine and then compelling his victim to furnish bail—it will be impossible for every Thomas, Richard and Henry who holds a justice's commission to issue summonses right and left after every clear Sunday, on the mere say-so of a trap artist who benefits financially by the arrests.



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Inter-State Road System

"A HOUSE divided against itself cannot stand," and a country comprising upwards of half a dozen states plotted together like the pieces in a crazy-pattern quilt, will, in the end, have a most bewildering national road system if each state is permitted to lay out its own system of state roads without due regard for the road system laid out in the adjoining states. Massachusetts is a small state and if its complete system of state roads were laid out without reference to the system in Connecticut at one side, Maine on the other side, and New York, Vermont and New Hampshire, its state roads would not in any wise harmonize with those of the others, with the result that the tourist, in making a circuitous trip, comprising all of the states, would have to make many detours in order to make use of the state roads in this group of states. A good course of procedure for a group of states, such as the New England ones, would be a road council consisting of delegates from the different states, who would lay out, with due reference to all of the states, a national or inter-state road system embracing all of them, so that a state road in one would be continued in the form of a state road in the other, and the whole system linking together the centers of population.

Unity Will Be System

A SYSTEM of inter-state roads of this nature would not necessarily be confined to a group of small states, such as enumerated, but would work as well in connection with any group of states in the country. It is a most natural inference that within the next decade or so national roads will extend from the Atlantic to the Pacific, from the great lakes to the gulf, and in many other sections of the country. In the trans-continental route it would be absurd for Ohio to build a national road across it without reference as to where Indiana's portion would lie, or Indiana to do this without proper regard for the situation in Illinois. It can be accepted as a fact that history will repeat itself in the matter of road building, and what Europe has done in the last 2 centuries and the system it has operated along will be repeated in this country, though in vastly shorter time. Europe has its main road arteries, and America will have its. In order that these arteries may be worthy of the name, and shall be properly situated from an economic viewpoint, it is imperative that adjoining states meet and work in unison, and that their work be pushed with a view of it being a part of a great national road system.

Uniform Road Conditions Needed

NOT only will a road system like this vastly enhance a motoring industry, but also needed in conjunction with it is a uniform speed law, uniform road rules and uniform lighting arrangements. The horse vehicle is a state affair, the motor car is inter-state, inter-national, inter-continental. In many parts of the country it is possible in a day's journey to cross, or partly cross, two or three different states, and a daily trip of 200 miles quite often lies within the confines of three states. With conditions like this it is highly essential for the pleasure of the motorists that a uniform system of road signs, speeds, and road regulations rule. Nothing is more disconcerting to the tourist than to have an afternoon's trip fraught with worry as to speed and license regulations when passing from state to state, or through different villages and towns. One license tag for all states is one step in the securing of this Utopian condition; one speed law for the open country in all states and the same speed regulations in villages, towns and cities in different states is another step; the compelling of all motor and horse vehicles to carry lights is the third step, and a fourth step is the uniform marking by road side signs.

Standardizing Road Wheels

STANDARDIZATION is the law of the day, although as yet few parts of different makes of car are standard in size, excepting those which the A. L. A. M. has reduced to a common standard. In no part of a car is standardization more needed than in road wheels of the artillery type, which is particularly necessary because of the advent of demountable rims, which must undoubtedly be considered one of the trends of the present season. In order to understand why standardization is necessary it will be of assistance to look at one of the gross examples consequent upon non-standardization. In two makes of cars with motors of the same size, the cars weighing approximately the same, and carrying 36 by 4-inch tires in front, and 36 by 5-inch tires in rear, it was found by weighing that one set of wheels was 118 pounds heavier than the other set. In one set the fellow was 50 percent wider than on the other, although both were of the same radial depth. This tremendous discrepancy in weight, in spite of the fact that both sets of wheels were similarly designed, and used on cars of practically the same speed and load-carrying capacity, seems a needless one, and one which would demand considerable difference in the attachment of demountable rims. There are in different wheels weight discrepancies because of the different bearings used. Discrepancies in rear wheels may be occasioned by difference in brake drums, and it is natural to expect that on chain-driven cars the rear wheels will weigh more than those on shaft-driven machines.

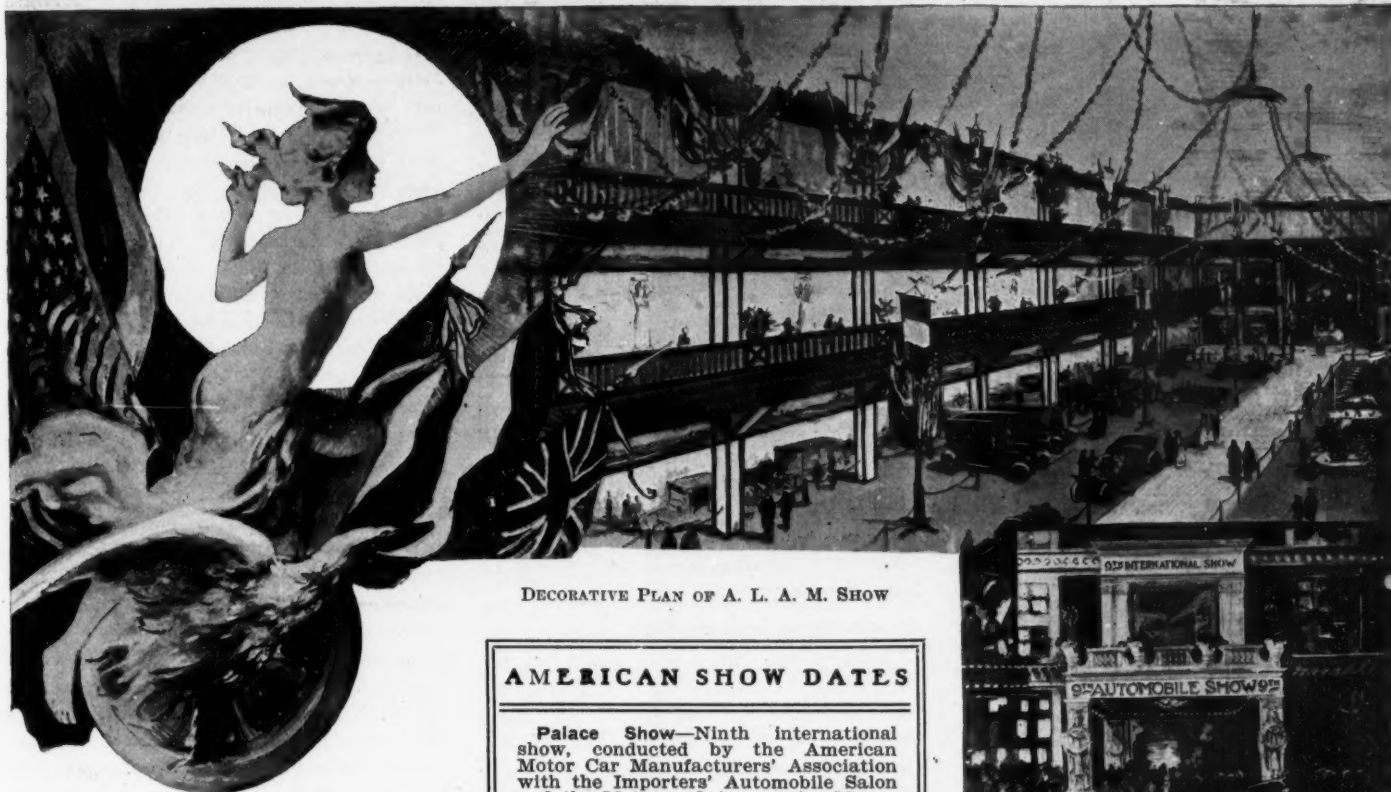
Not All Second-Growth Hickory

BUT the difference in wheels is not all in weight, the most marked difference being in the materials used. Catalogs use with great familiarity the term "second-growth hickory," but Motor Age has proved conclusively by gathering broken spokes from wheels which have collapsed that in a great many cases second-growth hickory is not used. In one case where, because of a skid the collapse of a rear wheel was complete, several spokes split in halves from end to end without any other indication of a fracture, an examination disclosed one spoke of the group to be pine. Manufacturers of cars generally get what they pay for in buying wheels. Observation has shown this year that one make of car, in which the woodwork of the complete set cost \$15, has had broken wheels in many of the contests in which it has entered, some of the wheels having collapsed on small provocation. Compared with this is another make of car using wheels the woodwork of which costs \$18 per set, and it, too, has had some cases of breakage. As compared with these two, is of a prominent car, in which the woodwork of the whole cost \$24, and of which wheels not a single one has been discovered broken in ordinary service during the season.

Material Very Deceiving

THE selection of spokes for a wheel is a matter which rests entirely with the wheelmaker. He may have before him a pile containing 1,000 finished spokes, every one of well-seasoned second-growth hickory. The first one picked up has a uniform white color and straight grain; the second one is half and half, one-half light color, the other half dark color, but straight-grained. The first spoke collapses under the first blow of the hammer in the hand of the wheel maker; the other is not fractured after three similar blows. To the ordinary mortal one spoke looks as good as the other; in fact, many would have chosen the first spoke because of its uniform light color. Because of this, difference in weight and strength can only be found by knowing the season of the year at which the tree, from which the spoke was made, was cut, and the curing process the timber was afterwards subjected to. This illustration merely shows the delusions that can exist.

SHOW PROMOTERS SELECTING THEIR DATES



DECORATIVE PLAN OF A. L. A. M. SHOW

AMERICAN SHOW DATES

Palace Show—Ninth international show, conducted by the American Motor Car Manufacturers' Association with the Importers' Automobile Salon and the Motor and Accessories Manufacturers, Grand Central palace, New York, December 31 to January 7.

Garden Show—Ninth annual show of Association of Licensed Automobile Manufacturers, Madison Square garden, New York, January 16-23.

Philadelphia Show—Annual show of Philadelphia Automobile Show Association, Second Regiment Armory, Philadelphia, week of January 27. February 3; J. H. Beck, Odd Fellows Temple, manager.

Chicago Show—Annual N. A. A. M. show in Chicago, February 6-13.

St. Louis Show—Annual motor car show in St. Louis, February 15-20.

Cleveland Show—Show of Cleveland Automobile Dealers' Co., in Cleveland, February 22-March 1.

Denver Show—First annual show of Denver Motor Club, Auditorium, Denver, Colo., March 4, 5 and 6.

PHILADELPHIA, PA., Nov. 16—Although the First Regiment armory, where the Philadelphia Automobile Show Association originally intended holding its annual show, is ideally located, it is much too small to accommodate the hosts of exhibitors who have already expressed an intention of securing space. The committee therefore took the bull by the horns last week and arranged to rent the Second Regiment armory, at Broad and Susquehanna avenue, which is considerably larger. This change will necessitate a postponement of the date of opening a few days, as the uptown armory is engaged for the early part of the week originally decided upon. The opening will therefore take place Wednesday, January 27, instead of Saturday, the 23d, and the wind-up will be on the following Wednesday, February 3. J. H. Beck, who successfully managed several previous Philadelphia shows, has been engaged as manager. He has opened offices at 216 Odd Fellows' Temple, Broad and Cherry streets, right in the heart of the row.

Detroit Show Dates

Detroit, Mich., Nov. 14—The Detroit Automobile Dealers' Association has decided to hold a show again this year, and the date has been fixed for February 15-20, which, as in former years, will be the week immediately following the Chicago show. Until last year the Detroit show was run by private individuals, chief of whom were William E. Metzger and Seneca Lewis. There was no building in the city large enough to accommodate all who wanted to show, so

last year there were two—the original one at the Light Guard armory and the "Da-da" show at Riverview park. Since then the mammoth Wayne pavilion has been built and the D. A. D. A. has secured it for the one big show which will result from the merging of the two, Messrs. Metzger, Lewis and associates having withdrawn in favor of the dealers' association. The show will be open to accessories of all kinds as well as motor cars. E. LeRoy Pelletier, advertising manager for the Everitt-Metzger-Flanders Co., will again be manager of the exhibition.

Minneapolis Has Show Fever

Minneapolis, Minn., Nov. 16—Things are booming in Minneapolis. The outlook is so good, the demand for cars has been so strong and all conditions have been so favorable so far and promise so well for the future, that there was a very confident and satisfactory tone noticeable at the meeting of the Minneapolis Automobile Dealers' Show Association held Sat-

urday night in the automobile club's headquarters in the Hotel Plaza. In fact, things looked so good to the members of the show association, which has been inactive for 2 years, that it was unanimously decided to give a week's show here in March. While this is the first public announcement made concerning the show, still it is known that the manufacturers will give strong support to the Minneapolis exhibit, believing that the harvest to be reaped in this territory warrants more than the usual attention. In embryo the plans of the show association provide for many elaborate features of entertainment during the week's display. There will be another meeting later this week at which time officers will be elected and committees appointed to work out the plans more in detail.

Denver Bills a Show

Denver, Colo., Nov. 14—The first annual show, conducted by the Denver Motor Club will be held in the Auditorium March 4, 5 and 6, 1909. The Auditorium has about 16,000 square feet of space available on the main floor for such a show and if necessary 10,000 square feet in the basement may be utilized. Over one-half of the space on the main floor has already been applied for. Floor plans and application blanks will be ready soon. The committee consists of Ralph W. Smith, C. P. Allen, Dr. E. F. Dean, George E. Turner and Dr. W. H. Sharpley.

UNUSUAL ACTIVITY IN BIG TRADE CENTERS

DETROIT, MICH., Nov. 16—Unusual activity exists in the majority of car factories here, and those not making factory additions, or erecting new plants, are increasing the working force. The Brush Runabout Co., has, in addition to its present manufacturing facilities, secured possession of a new plant located at Euclid avenue and the railroad tracks, which is approximately a mile from the parent plant. The new acquisition is a one-story place, which, in conjunction with the old, will give the company facilities for turning out 3,000 cars. The Motorcar Co., builder of the friction-driven Cartercar, has consolidated with the Pontiac Motor Buggy Co., and the new corporation has taken over the plant of the Pontiac Spring and Wagon Co., at which place the Cartercar will be manufactured and in addition a motor buggy line added. The Anderson Carriage Co. claims to have practically placed its entire 1909 output of Detroit electrics. The Herreshoff Motor Co. is buying parts for 500 cars which will be built in the old Thomas-Detroit factory. The Regal Motor Car Co. is adding to its present factory facilities and has had its 1909 testers on the road for some time.

At the plants of the Packard, Chalmers-Detroit, E-M-F, Ford and Cadillac, everything is activity, and the earnestness with which the work in every department is being pushed can be looked upon as a good criterion of the 1909 trade. The De Luxe Motor Car Co. is bringing out a medium-priced runabout car. The new Grabowsky Power Wagon Co. is busy on its commercial machines, and the Seitz Transmission Co. is building a four-cylinder 3-ton truck, in which is used the Seitz double-friction transmission. At the Blomstrom plant arrangements are going ahead for a good output of the Gyroscope cars. In Pontiac the Rapid Motor Co. is making big additions to its factory, doubtless for the accommodation of the manufacture of its new four-cylinder truck in addition to its two-cylinder line. The American Machine Co. is building a few of its Commerce trucks. At the Reliance factory the manufacture of its two-cycle trucks is being pushed with vigor. The Aerocar Co. is officially closed and the stockholders are paying 100 cents on the dollar. Owing to the E-M-F organization the Wayne and Northern companies have ceased to exist.

At Pontiac the Welch company has its 1909 plans well under way and the Oakland company is pushing its two and four-cylinder cars. The Hayes Mfg. Co. is building an addition to its plant for the manufacture of metal bodies. Holley Brothers will have a new carbureter and magneto for next year, and at the plants of the Lavigne Mfg. Co., lubricator maker; Edmond & Jones, lamp maker; the Bris-

coe Mfg. Co., radiators, and Northway Motor & Mfg. Co., motors, everything is busy at the present time.

Outside of Detroit and in Michigan there is considerable activity displayed. The Hayes Wheel Co., Jackson, Mich., has taken over the plant used by the C. V. I. Co. and is pushing the manufacture of motor car wheels. The Kalamazoo Carbureter Co., Kalamazoo, Mich., has reorganized with increased working capital. The New Process Steel Co., Marshall, Mich., has started the manufacture of castings and drop forgings. At Flint, Mich., the Champion Ignition Co., with Albert Champion at the head, has been organized for the manufacture of magnetos. In Jackson, Mich., the Jackson Automobile Co. is working full force on its 1909 cars. The Buick plant at Flint is working to its limit, and the Oldsmobile and Reo interests at Lansing are entirely occupied with the 1909 lines.

Prosperity in Indianapolis

Indianapolis, Ind., Nov. 16—Returning prosperity has reached the city without delay, according to local motor car manufacturers who have noted considerable improvement since the election. The Premier Motor Mfg. Co. received an order for six cars the morning following the election, the order coming from Chicago. Orders have been coming in so rapidly since then that a night shift has been put to work. The Overland Automobile Co. states that business has shown no little improvement since the election. The company claims that all of its agencies have asked to increase their allotment since the election, three of these agencies asking for increases of fifty cars each. That a successful year is ahead, is the statement of a representative of the Nordyke & Marmon Co., who says, however that it will require the work of the entire winter to determine the effects of the election. At Newcastle the Maxwell-Briscoe company added 100 men last week, making about 700 men now employed in the plant. The new men were secured in Cleveland and eastern cities and the company expects to have 1,000 people at work by January 1.

Toledo Trade Optimistic

Toledo, O., Nov. 14—Local conditions are extremely pleasing to the dealers. Despite the lateness of the season there is an activity about the market seldom seen here. New high-grade machines are being sold right along and some of the dealers are complaining about an inability to secure them from the factories as fast as needed. The call at present seems to run largely to the more expensive types, although a nice business is being done in some of the cheaper lines. The ideal weather conditions and the splendid roads have no doubt added to the activity of the demand. Optimism is apparent on every

hand and the dealers are looking forward to a season of unprecedented prosperity. The general improvement of business conditions seems to have been felt along this line more perceptibly than anywhere else, because of the fact that people of means have been at all times able to buy if they had felt that way, and the only thing needed to bring about sales was a confidence in the future. With the coming of that confidence has come an immediate rush of trade. Altogether the condition is a pleasing one and presages business such as has not been experienced here for a long time.

Grand Rapids Outlook

Grand Rapids, Mich., Nov. 16—Motor salesrooms of Grand Rapids, Mich., are not crowded with cars just now, a condition that is most pleasing to the dealers, for it tells a tale of a most successful season. Throughout the city the agents of the standard cars tell of the good business of 1908, which will be classed as one of the best years in the motor car business of this city. There are great things promised for next year. The past season the demand was for the medium-priced car, but present indications show that next year the high-priced models also will be included. This season there were no contests, the state tour of the Michigan Automobile Association having been called off, but next year will almost surely see such an event. Besides this a number of hill-climbs are in sight. It is possible, too, that when Grand Rapids secures a convention hall, a thing which has been in contemplation for some time and which has not yet assumed definite shape, that the long-desired show may be promoted by local dealers.

Indianapolis Trade Lineup

Indianapolis, Ind., Nov. 16—There will be considerable changing in lines among Indianapolis motor car dealers. A large number of agencies have already been changed and it is understood that still more will follow before January 1. Each year there are a large number of changes, few dealers carrying the same lines more than a year or so. Next season will be no exception. The agencies handled this year and those that will be handled next season are as follows:

Fisher Automobile Co., 1908, National, Maxwell, Mitchell and Stoddard-Dayton; next season, National, Stoddard-Dayton and Overland.

Hearsey-Willis Co., 1908, White, Rambler, Pope-Waverley, Overland and Marion; next season, White, Rambler and Mitchell.

D. B. Sullivan Auto Co. will continue the Lambert next season, and the Cadillac Auto Co. will also continue to handle the Cadillac exclusively.

Buick-Losey Co., 1908, Buick; next season, Buick and possibly Maxwell.

Willis-Haywood-Holcomb Co., recently organized, will have the Packard, Studebaker, E-M-F and Apperson.

The Gibson Auto Co. will continue to represent the Premier, Ford and Reo.

Indianapolis Auto Co. will continue its Cartecar agency, and the Indianapolis Motor Car Co. will keep on handling the Rapid commercial vehicles exclusively.

A newcomer in the field will be the Indiana Carriage Co. with the Regal, Jackson and the commercial line of the Sayres-Seoville Co.

FOURNIER LAST TO ARRIVE

New York, Nov. 18—Special telegram—Henry Fournier, who will drive an Itala at Savannah, and who is the last of the foreign drivers to arrive in America, landed Tuesday and at once started for Georgia. "I am really and truly glad to visit America again," said the well-known Frenchman. "I would not care to predict as to my possible success at Savannah, though I hope to quickly become familiar with the course and shall do my best to figure among the early finishers. While the demand in France for big cars has not been as great as before, the monster tourer has received considerable impetus from Michelin's latest innovation in the shape of Les Roues Jumelles—a double rim and two tires of a slightly smaller size, instead of a single large tire, a device which greatly increases the life of the tire and does away with a great deal of tire trouble. The field for a good American car on the continent is excellent." Another motoring celebrity to arrive by the North German liner is the Chevalier Garabaldi Colteletti, who comes as a delegate of the Automobile Club of Italy to look after the interest of the Italian entrants in the races at Savannah. When asked regarding the status of the Italian industry, he said it was only in a good way, where the best-known cars were concerned, but with the exception of such small cars as had achieved a good reputation or were very prominently before the public, none of the newer entrants in the field had been able to survive.

SIX STATES IN LINE

Governors and Governors-Elect Will Meet in Boston and Discuss Legislation

Boston, Mass., Nov. 16—One of the best plans for bringing about a better feeling between lawmakers and motorists has been evolved by Governor Curtis Guild, of Massachusetts, who has issued a call for a meeting of the six governors of the New England states with the six governors-elect. Next January is the first time in many years where all six states change governors. The governors have all accepted Governor Guild's invitation and they will be his guests while in Boston next week. The six present governors are: Maine, William T. Cobb; New Hampshire, Charles M. Floyd; Vermont, Fletcher D. Proctor; Massachusetts, Curtis Guild, Jr.; Rhode Island, James H. Higgins; Connecticut, Rollin S. Woodruff. The six men who are to go in next January are: Bert M. Fernald, Henry B. Quimby, George H. Prouty, Eben S. Draper, Aram J. Pothier, George L. Lilley.

The meetings are to be held at the Tremont theater, and as they are to be open to the public it is expected that there will be many of the motorists and dealers present as well as members of the legislature. The session devoted to highways and their use will be November 24 at 2 p. m. The first topic will be "The Construction of Highways," by Harold Parker, chairman of the Massachusetts highway commission, who has just returned from the international congress of roadbuilders at Paris. James H. MacDonald, state highway commissioner of Connecticut and president of the American Roadmakers' Association, will be the second speaker, his subject being, "Trunk Lines of Highways for New England." The third speaker will be Nahum J. Batchelder, master of the National Grange, Patrons of Husbandry, and ex-governor of New Hampshire. He will speak on "Automobiles and Their Regulation."

When these papers have been read the meeting will be thrown open to public discussion. All papers read and suggestions made at the three sessions of the conference will be referred to the state chiefs of departments with instructions to meet, consider and report to the incoming governors before January 1 their findings in regard to uniform laws for all New England. That the sessions will be productive of much good there is little doubt, for suggestions may be made that will be incorporated in the inaugural messages of the different governors which will help out the lawmakers when considering legislation in the future.

SWANBROUGH MAY APPEAL

Denver, Colo., Nov. 17—E. W. Swanbrough, driver of the Corbin car in the gasoline economy contest of the 7th, may take an appeal to the A. A. A. from the report of the protest committee which deprived him of the winning cup. Disclaiming any intent to win the contest by unfair means, Mr. Swanbrough says: "It was not to my knowledge that the fuel used was doped, and I don't believe it was. The testing committee reported a trace of ether. Now, the tank used in the Greeley run is the same tank used in the Labor day race. There was a little ether in it that we used in country running. This faint trace is all that remained, and so small was the amount of ether that I have not yet been informed what proportion of ether to gasoline was found. It is intimated that something like a teaspoonful was probably in the fuel." Swanbrough is extremely anxious to prove the claim of superiority of the Corbin by tackling the contender and announced winner, the Colburn, over the road again. The silver cups were presented to the winners last Tuesday night, when nearly the entire membership of the club attended the Broadway theater to hear the comic opera, "The Alaskan." The report of Referee Fry, just mailed to the A. A. A., is considered a model of its kind, as it covers all the different angles.

OFFICIAL REPORT OF DENVER MOTOR CLUB'S ECONOMY RUN AS MADE BY REFEREE JOHN FRY

No.	Car	H. P.	Driver	Passengers	Weight	Gasoline			Oz.	Percentage	Miles per gallon	Specific gravity	Boiling point
						G.	Q.	P.					
10	Colburn	30	Fawcett	5	3,600	3	3	0	4 1/4	4.89	29.55	0.710	65
3	Pope-Hartford	30	Grady	5	3,800	3	3	1	8 1/2	4.817	28.60	0.725	72
1	Stevens-Duryea	24	Maxwell	5	3,850	4	0	0	12	4.812	27.15	0.727	70
8	Stoddard-Dayton	45	Loveland	7	4,600	5	2	1	6 1/2	4.16	19.69	0.701	61
5	Chalmers-Detroit	30	McDuffee	5	3,360	4	0	1	3 1/2	4.158	26.93	0.726	70
6	Franklin "D"	28	Talbot	5	3,325	4	0	0	12	4.156	27.15	0.727	68
14	Aerocar	20	Young	4	3,150	4	0	0	12	3.93	27.15	0.703	55
20	Oldsmobile	40	McDonald	3	3,160	4	1	1	7 1/2	3.65	25.17	0.727	67
21	Thomas Six	40	Ball	7	3,670	5	1	1	6 1/2	3.47	20.57	0.725	75
4	Cadillac	30	Hall	5	3,445	5	0	0	11	3.47	21.92	0.727	74
9	Cadillac	10	England	2	1,870	2	3	0	9 1/4	3.38	39.40	0.727	78
12	Ford	15	Alkre	3	1,725	2	2	1	9 1/2	3.267	41.17	0.703	59
2	Fuller	40	Thorney	5	3,500	5	2	0	2 1/2	3.26	20.29	0.698	67
15	Rapid Truck	30	Larsen	2	5,725	9	0	1	2 1/2	3.32	12.24	0.701	62
7	Buick	20	Norton	3	2,000	3	2	0	4 1/2	3.03	31.00	0.727	65
19	Dorris	30	Havens	4	3,275	5	2	0	10 1/2	3.00	20.00	0.697	57
11	Colburn	30	Colburn	3	3,235	5	2	0	10 1/2	2.97	20.00	0.725	78
18	*Corbin	30	Swanbrough	4	3,220	2	1	1	5 1/2	*	*	0.697	62

*Disqualified on account etherized gasoline.

POPE MFG. CO. ASSETS EXPLAINED IN COURT

HARTFORD, CONN., Nov. 17—Special telegram—The assets of the Pope Mfg. Co. were subjected to a most searching inquisition before Vice-Chancellor Howell in Newark, N. J., yesterday afternoon on a hearing on an application by the receivers of the company for instructions relative to an offer of the reorganization committee of \$1,500,000 for the Pope assets. When the receivers last Tuesday submitted the offer of the committee to the vice-chancellor there was a sole objection.

One Thomas H. O'Connor owns 100 shares of first preferred, 100 shares of second preferred and 150 shares of common stock. Both Mr. O'Connor and his counsel, Willard C. Fiske, of Jersey City, were of the opinion that the offer of the reorganization committee was "grossly inadequate." Mr. O'Connor, however, did not take the stand.

The Pope faction, on the other hand, insisted that the valuation is fair. Albert L. Pope, Colonel George Pope and Frederick C. Billings, the last named being one of the official appraisers of the Hartford plant, supported the Pope claim of fairness of the offer of the reorganization committee. Colonel Pope testified it would be difficult to realize \$500,000 net for the Hartford plant in liquidation while \$200,000 would be an outside price for the Westfield, Mass., plant at a forced sale. The Thompsonville, Conn., plant he appraised at \$100,000, and remarked that the company had tried to dispose of it for the past 5 years, it now being used as a tobacco warehouse. The Hagerstown, Md., plant he believed would eventually net about \$125,000, inclusive of the \$57,000 already paid for the factory premises if the reorganization scheme should carry, otherwise \$75,000 would be the outside amount that could be realized.

The Pope Motor Car Co.'s claims against the Pope Mfg. Co. Colonel Pope estimated as worth \$350,000 at the outside. The stock of the latter company, which is owned by the Pope Mfg. Co., would bring nothing. Two plants of the Federal Mfg. Co., whose stock is owned by the Pope company, might realize \$50,000 net. One at Peoria, Ill., already has been sold for \$35,000 cash and the other at Cleveland is worth equally as much. From the aggregate sum of \$70,000 Colonel Pope deducted the sum of \$19,000, a claim for that amount being in litigation in the Ohio courts. A contract the Pope company has with the Rubber Goods company, according to Colonel Pope, has no value in the event of liquidation.

Among other minor assets listed was a block of forty shares of American Sight-Seeing Car and Coach Co., for which no bid could be realized. At the conclusion of the enumeration of the assets of the company receivers' counsel asked Colonel Pope the following question:

"These several valuations total about \$1,250,000. Is it your opinion that \$1,500,000 is a fair offer for the Pope company's assets?"

"Yes, sir," answered Colonel Pope with emphasis.

Colonel Pope was closely cross-examined by Mr. Fiske, counsel for Mr. O'Connor. To all questions Colonel Pope set forth clearly the position of the company and the proceedings of the receivers.

Mr. Fiske contended in his arguments that the creditors of the company were not interested, but rather the stockholders. He urged the duty of the court to protect the stockholders, whether great or small. Mr. Fiske contended that the company's plants were worth much more than the price offered and the permit of the sale would be a more summary condemnation of his client's holdings in the concern. Mr. Lindbury, counsel for the receivers, in his opening argument declared that Mr. O'Connor was the sole objector, and remarked that Mr. O'Connor was unable to suggest a better plan, in fact he did not even pretend to. Should the Pope plants be put up at auction, Mr. Lindbury was of the opinion that the reorganization committee would doubtless be able to bid them in at \$500,000, Percy S. Bryant, of Hartford, counsel for a creditors' committee, saying that the offer was the best unless Mr. O'Connor could tell forthwith where a sale could be made on better terms. Mr. Bryant contended that for the sake of the creditors alone the offer should be accepted, so as the business might be run with the stockholders' money and at their risk. Vice-Chancellor Howell took the papers and said he would decide the matter this week.

Columbia Report Filed

Hartford, Conn., Nov. 17—Halsey M. Barrett and Henry W. Nuckols have filed their report as receivers of the Electric Vehicle Co. of business during the month of October. According to the September report the receivers had cash on hand amounting to \$208,188.45 and collections brought the figures up to \$304,804.53, including \$77,914.04 for royalties. The October report shows a balance on hand of \$175,834.28 November 1. Cash sales for the month amounted to \$22,592.02, which also includes charges on account. Listed in the receipts is an item of \$77,914.04 from Selden royalties and in the disbursements is listed an item of \$76,580.41 to the licensed association. It will be noted that practically all the money received from the Selden royalties was turned over to the licensed association, the reason for which is that after the company passed into the hands of the receivers a new royalty agreement was necessary and this came about in due course with the consent of the courts. A definite maximum sum that the Electric Vehicle Co. should re-

ceive in any year was fixed and the company before the month of October received this sum with the exception of about \$1,300, and the excess over \$1,300 was turned over to the licensed association. The balance on hand November 1 is smaller than that of October 1, but it must be borne in mind that a larger force is now employed and that more extensive operations are being carried on than heretofore.

SHAWMUT PLANT BURNED

Stoneham, Mass., Nov. 16—The plant of the Shawmut Motor Co. was destroyed by fire last Friday morning with a loss of more than \$100,000. The factory comprised a main building, 150 by 50 feet, and two extensions of 50 by 35 each. It was a wooden structure, three stories high and it was practically destroyed. Stoneham has very meager fire apparatus and before the department arrived the entire structure was doomed. The fire started at 1:25 a. m. in an annex in the rear and quickly communicated with the main building. Once it got well under way it threatened several churches, schools and dwellings nearby. Aid had to be summoned from nearby towns to put the fire out. The Shawmut company has been in existence for about 3 years and it is backed by Boston capitalists. This year, however, it was planned to do business on a larger scale and Shawmut cars were entered in some competitive events. There were several cars just finished in the shop, a couple of which were to have been delivered within a few days and they were destroyed. The machinery represented an outlay of about \$75,000 for it was all modern and of the best, while the building itself was valued at \$15,000. There were about fifty men employed in the plant and they are thrown out of work. The company carried insurance. The directors of the company have not yet decided as to the future plans.

STRICKER KILLED IN SOUTH

Birmingham, Ala., Nov. 17—Special telegram—Another one of America's crack drivers, Emile Stricker, was killed at an early hour this morning while trying for the 24-hour record in a Renault on the local track. Leon Barrows, of Birmingham, who was in the car with Stricker, was seriously though not fatally injured. At 8 o'clock last night Lewis Strang and Stricker began the effort to lower the 24-hour record, Strang being relieved by Stricker at 12:45 this morning. Stricker began making terrific speed almost immediately. The track was poorly lighted, and when the car dashed around the curve at the west end at a fast clip one tire exploded, followed quickly by the explosion of a second one, and in an instant the car was wrecked. Stricker and Bar-

rows were picked up and hurried to a hospital, but Stricker died before medical aid reached him. Stricker was a contestant in the last Vanderbilt, in which he drove Robert Graves' Mercedes. He was mentioned as a possible driver of the National when that car was entered in the Savannah grand prix, but the mount finally was given Hugh Harding, so poor Stricker was out of the running at the Savannah meet.

WORCESTER BILLS CONTEST

Worcester, Mass., Nov. 16—The Worcester Automobile Club has planned for a 10-hour, 200-mile endurance run and reliability contest to take place Tuesday, December 8. The route selected will be over the rough, hilly back roads of Worcester county and surrounding territory. The start will be made from the Worcester Automobile Club at daylight and will be so arranged that cars will be checked in at the club rooms every 2 hours. Already a sufficient number of cars has been assured to guarantee the success of the run, and on account of the route, which will not be made known to the contestants until the time of the start, cars making a clean score will be entitled to more than ordinary credit. It will be a sealed bonnet contest, and provisions will be made so that consumption of gasoline will be an important factor. Worcester county has some ideal routes for such a contest, and it also has some roads that will put the best of the cars to a severe test.

WILL BUILD A HOME

Milwaukee, Wis., Nov. 17—The Milwaukee Automobile Club will soon have a home of its own, built along the most approved lines at the club's expense, and embodying all of the best ideas in construction. A site is now being chosen. The plan is to make the M. A. C. one of the leading organizations in the A. A. A. in all particulars. The club already has earned a great reputation for its tours and contests. Plans for the clubhouse are as yet indefinite, but it will include a large garage for the use of members and visiting owners. The club also has provided for the institution of a bureau of tours and information in the office of the secretary, James T. Drought, in the Railway Exchange building. The club is preparing for an especially active season next year.

ELECTION OF A. L. A. M.

New York, Nov. 14—The annual election of the Association of Licensed Automobile Manufacturers held this week resulted as follows: President, Charles Clifton, George N. Pierce Co.; vice-president, Thomas Henderson, Winton Motor Carriage Co.; secretary, L. H. Kittredge, Peerless Motor Car Co.; treasurer, George Pope, Pope Mfg. Co.; executive committee, Messrs. Clifton, Davis, Henderson, Stilwell and Lloyd.

PROBES THE DUST EVIL

Federal Government Compiles Interesting Information Concerning Preventives

Washington, D. C., Nov. 14—The rapidly-growing interest and desire for information displayed by road engineers and others in matters pertaining to dust prevention and road preservation have lately become so manifest that it seems necessary to supply specific information in as comprehensive form as possible. Accordingly, the office of public roads, department of agriculture, is about to publish an elaborate monograph on dust preventives by Prevost Hubbard, assistant chemist of the office of public roads. Through the courtesy of the officials Motor Age is enabled to present the following advance summary of the monograph.

The suppression of dust on roads is a problem which has become prominent only within recent years, but its importance is rapidly increasing, as it involves the saving of much money and the comfort and convenience of the public at large, as well as of road users. In arriving at a complete understanding of a subject of this kind it is essential that as broad a view of it as possible be obtained and, in order to achieve this result, one must look at the matter from at least three different standpoints—that of the engineer, the chemist and the layman. The direct solution of the problem depends to a great extent, of course, upon the efforts of the road engineer, but the aid of the chemist and road user will eventually prove to be important factors which cannot be overlooked. The subject is one which also deserves the attention of the general public, as it has a very direct bearing upon matters which are of universal interest.

The motor car is perhaps the most potent factor which at the present time operates to produce dust and destroy roads. When moving at a high rate of speed its broad rubber tires exert a pulling or lifting effect upon all loose material on the road surface and a cloud of dust is sucked up and carried along behind each vehicle. The slightest current of air then carries the dust cloud over the surrounding country. The enormous increase in the last few years of fast motor traffic along public highways has aroused general interest in the subject of dust prevention.

The coincidence of the appearance of the motor car with the aroused interest in the dust nuisance has led to the impression that the former is the sole cause of the trouble. It will be remembered, however, that the dust nuisance on a somewhat smaller scale existed long before the coming of the motor car. If the motor car has resulted in an awakened interest in this problem, it will have served a valuable purpose, but besides this it has undoubtedly exerted a beneficial influence in

arousing the public at large to the knowledge that good roads are necessary to the welfare of any community, and thus it has been instrumental in the construction of many miles of road which would otherwise have remained unbuilt.

The dust problem as it stands today seems to be open to two methods of attack—by applying materials to the road which will hold down the dust formed, or by methods of construction designed to reduce the formation of dust, and therefore the wear of the road, to a minimum. Dust prevention has so far been mainly confined to the treatment of old macadam surfaces, and many preparations have appeared in the last few years for which great claims have been made.

It is undoubtedly true that thousands of dollars are wasted annually in a repetition of experiments which have time and time again proved costly mistakes. On the other hand, experiments which have given good results in some places have also proved failures when tried in different localities. It is necessary, therefore, not only that the experience of others be considered, but that some thought be given to the probable effect of local conditions upon the results which have in general been obtained.

The division of dust preventives into two classes, the permanent and the temporary binders, suggests in a general way the first point that should be considered in regard to selection. Taken in connection with the three great classes of roads—country, suburban and city—it is at once evident that under ordinary conditions the permanent binders only are suited to the first of these for the reason that it is impracticable to treat long stretches of country road at comparatively short intervals of time. When employing temporary binders the road should not only be under constant observation so that applications may be made whenever necessary, but facilities should be such that the work may be quickly and efficiently performed. It is seldom that this condition of affairs exists on a country road.

OFFICER TO REGULATE TRAFFIC

Indianapolis, Ind., Nov. 14—The city of Indianapolis is now admiring its first mounted patrolman for the regulation of traffic. Incidentally, motor car and carriage owners owe no little gratitude to H. H. Rice, of the Waverley company, as he was directly responsible for the new officer. One day recently Rice drove down town in an electric car and stopped in front of an office building, leaving the car next to the curb. When he came out there were two motor cars in front of him, three back of him and a carriage and a motor car strung along the side of his rig. By careful maneuvering he succeeded in extricating his car in about 15 minutes, after pushing the others out of the way. He complained to the board of public safety about it.

SOME PROPHECIES ON 1909 RACING CARS

By Rene M. Petard

NOW that the racing rules for another year have been settled by the International Association of Recognized Automobile Clubs, as was lately reported in these columns, European designers will at once start work on their new racers, and, judging from the latest reports and rumors, quite a few newcomers in the field are to be expected. In order to give the American public and makers an insight of the question which the distance has always made rather remote, even to those most interested, consideration will be given in the following to the influence which the new rules will have on the design and construction of the 1909 racing cars, together with an occasional reference to European methods of race preparation.

As was before stated, a large number of entries is expected in next year's big road races. On the other hand, it is doubtful, although the question was brought up, whether a longer course than usual will be selected, at least for the French race, so that there is every chance of a crowded race in which there will be a large amount of passing, necessitating cars of quick accelerating power, and this will be one of the most important points to be considered and one which will very materially affect the design.

Racer Not To Resemble Tourist

It is not to be expected that the reduction in engine size included in the rules will bring about a closer resemblance between the racing and the touring cars. In fact, the effect will altogether be different, and an eclosion of high specialized machines, which the unaverted mind certainly would term as freakish, is to be witnessed. A forecast of what will happen can easily be drawn from the history of the English 4-inch race, which was expected to be a touring car event and turned out to be the competition so far held in which the most unconventional machines were presented.

The influence of the minimum weight limit will be small, as, considering the type and size of the mechanisms which will be used, there is very little reason to believe that any maker will produce a car below 1,984 pounds; at the same time it will be well to keep as close to this limit as other conditions, especially adherence, will permit. It might not be untimely to state as regards this special question that foreign makers have pretty nearly abandoned the old notion that weight within reasonable limits was a hindrance to speed. In fact, not a few French makers openly admit that their unsuccesses in late years have been largely due to excessive power in proportion to weight. Inspection of past results will evidence the fact that the successful cars of the past 2 years were all on the rather heavy side, while the preceding successes of Brasier and Renault had been victories

JUDGING from experiences gained in the limited-bore engines and limited-weight of racing cars of this year in the grand prix and other European contests, the racing cars for 1909 will have engines with particularly long strokes, the limit being 10 inches and an average approximately 8. With long stroke motors of this type, it will be necessary to maintain a crankshaft speed of 2,500 revolutions per minute and a cold compression ranging from 90 to 100 pounds. With high crankshaft speeds a large-diameter valve will be imperative, it being at least 3 inches in diameter. Coupled with large valves will be the hemispherical combustion chamber with valves in the top and actuated by a single rocker arm; that is, one rocker arm for the intake and the exhaust valve of each cylinder. In timing the valves, which will be done to obtain the maximum power, the exhaust will be given a big lead, and in many cases the intake not closed until after the exhaust has opened. Because of the enormous piston speeds castor oil will be generally used in lubricating the motors. Make-and-break ignition, using the magnetic plug, will be very much in vogue on many cars. Individually cast cylinders and a ball-bearing crankshaft are certain to receive attention. Preference will be for the multiple-disk clutches and chain drive will be used on the major percentage. If the law permits detachable wheels will find ready use and radiator and bonnet design will be determined by the minimum of wind resistance offered by them.

of relatively low-powered cars in the years of weight uniformity.

Will Use 10-Inch Stroke

Next year will be a long-stroke year, as was 1908, or rather more than was this year. Strokes of 10 inches will probably be seen; these, however, present constructional difficulties which will probably prevent their general adoption. The writer favors 200 millimeters or approximately 8, to be exact 7.87 inches. This will make an already quite high engine, although not sufficiently so to bring any noticeable perturbations in the stability of the machine in negotiating curves, such as were evident in the Voiturette grand prize, where the torque reaction of the very high single-cylinder engines created considerable driving difficulties around corners. It was found that engines with crankshafts turning left handedly were easier to man-

age in the numerous left-hand turns. Considering the fact that most races are run counterclockwise, with a predomination of left-hand turns, this sense of rotation should be recommended for racing engines, and was already quite apparent this year.

To draw full advantage of the long stroke, and to give the engine the necessary flexibility on the crowded course, piston speeds much above normal will have to be resorted to, and the most successful motors certainly will keep up to 2,500 to 2,800 revolutions per minute without any appreciable drop in the power curve, which even conservative estimates expect to see rise above 130 horsepower.

Valves in Cylinder Heads

To attain these results the greatest care will have to be exercised in the laying out of the valves and piping, and in the timing of the motor, with consideration to the laws of gas flow and inertia. The valves in a hemispherical cylinder head, which were a majority this year, will next year be the rule, and they will preferably be set at 45 degrees angle, as in the Clement 1908 racer. The writer favors flat-seated valves in such an engine as having a better seat at high speeds and requiring considerably less lift for a given port area. The lift, however, should be sufficient to allow for more than the strictly necessary opening, as flat valves create more wire-drawing effect on gases than do cone-seated ones.

Will Have 3-Inch Valves

In the design of the valve proper the fillet should be very large, so as to guide the gas to the edge without the creation of eddy-currents, and the portion of the valve head bearing on the seat should not be left to protrude at a higher level than the head proper, as is done in ordinary flat valve practice to facilitate grinding, as this sets up a resistance to gas flow at the very point where it is most harmful. The valves themselves should be very light, as well as the reciprocating parts in their actuating mechanism to avoid inertia effects and insure strict obedience to cam profile. The inlet valve should be at least a full 3 inches diameter. The exhaust valve, if single, should be at least equal, although the above considerations of shape are of less importance for its design, but the writer would favor a smaller valve or an equal one with less lift and a well-designed valve closed exhaust port at bottom of stroke.

The exhaust valve should preferably seat direct on the cylinder head without the use of a cage to insure a cool and undistorted seat, which would otherwise be feared considering the diameter. This would increase complication and reduce accessibility, but the chances of a machine are so utterly spoiled by a valve breakage under any condition that it cannot well be raised as an objection.

If a caged-in construction has to be resorted to, the writer will recommend that used on the motor which Nazarro drove with the well-known success at Brooklands. In this high rotary speed motor a single inlet and two exhausts were provided, all overhead. A fork-shaped rocker arm actuated the exhaust pair from a single actuating rod. This construction permitted to use exhaust valves of relatively small diameter, reducing the risk of pitting and of seat warping to reasonable limits, as was proved by the results achieved in the race, which was one of the hardest tests an engine ever was put to.

Want Single Rocker Arms

As regards the actuating mechanism, the overhead camshaft is most tempting, but it tends to further increase the height of an already abnormal engine, so that it seems preferable to leave this part in its more usual location in the crankcase. For the rocker arm construction the writer would favor the single beam, long ago inaugurated on the Fiat racers and used on the Stoddard-Dayton stock cars, flat-leaf springs being used in preference to coil for valve return action.

The cam design should be such as to permit of rather wide clearance between rocker arm and valve stem, giving more sudden opening of valve. In the designing of the moving parts considerable care should be taken to so dispose the centers of gravity and of inertia of the beams, rods and fitments that a minimum effort be necessary to their motion at the highest speeds, and the necessary return springs should be fitted besides the valve springs proper to insure constant contact between the valve rods and the cams.

One of the main points in the successful design of such a high-speed engine is that of timing. Let it first be accepted that the recommended timing will be altogether different from that which would be adopted in an engine where anything like fuel efficiency was looked for. We simply want the maximum power at practically any cost.

Open Exhaust Valves Early

Exhaust valve lead will be increased over current practice, 65 degrees before lower dead center not being exaggerated, although a suitable and large exhaust port in bottom of cylinder would permit advantageously to reduce this figure. If ports are well designed, lag of exhaust closing would not need be more than 10 to 15 degrees, this depending largely upon the length of the exhaust piping and its effect on the momentum of the outgoing charge. The lag at inlet opening should not exceed 20 degrees in order to give the cylinder the maximum of time to fill itself. The suitability of an overlapping action of the exhaust and inlet valves can only be decided upon when the piping is laid out. It works at its best with a long exhaust pipe and a short inlet, and the auxiliary exhaust port is unfavorable to

it. The lag in closing the inlet also largely depends upon the piping design and the carbureter resistance to gas flow, but it should, in the writer's opinion, be around 15 to 20 degrees, supposing other conditions favorable.

These conditions of timing and of speed are of considerable influence on compression, but it seems to the writer that considering past experience and the special requirements of the engine as to speed and flexibility, a safe compromise could be struck between 90 and 100 pounds cold. A compression relief through sliding camshaft would be useful for starting, but the writer will insist upon the undesirability of special exhaust cams for the use of engine as a brake, as was made on a few European racing cars. Such cams are highly desirable on touring cars, but in a racing car their use brings such perturbations in the carbureter functions as to greatly reduce the rapidity with which the car picks up speed after their operation, making them more detrimental to high average speeds on a difficult course than would be even occasional misuse of the mechanical brakes.

Hints as to carbureter design are too special a proposition to be insisted upon here. It should, however, be mentioned that the throttle should be as close to the inlet valves as possible. In fact, the most successful French designer of racing cars always made his racing engines with twin cylinders and had a separate throttle for each pair located within the casting directly under the valves, and this he considers as a point of vital importance.

Will Use Castor Oil

Lubrication will best be by the simple combination of splash with an overflow and a return pump to upper part of crankcase. Castor oil lubrication, inaugurated this year, will certainly generalize next season as favoring the enormous piston speeds aimed at. The cost of it is such that it will only be used in the very last days of practice and on the race days. Provision should, however, be made for it at the start through specially tight piston rings and of all means which will avoid its invasion of the combustion chamber, as it is of a most searching nature and is prone to leave more carbon deposits than the majority of other oils.

Magnetic Spark Plug Coming

A successful departure from standard ignition practice which was used on some of the best cars of this year's races was the low-tension magnetic make-and-break, and it certainly will be more generally used next year. It will probably be used together with a well cynchronized system of simultaneous ignition at two distant points in the cylinder head. This was used in the most remarkable engines of

the small car race, where the unfavorable before-the-race theoretical comment which the move suggested was completely upset by results consisting in the obtention of 25 horsepower at 2,750 revolutions per minute out of a single 4-inch bore cylinder.

Separate Cylinder Castings

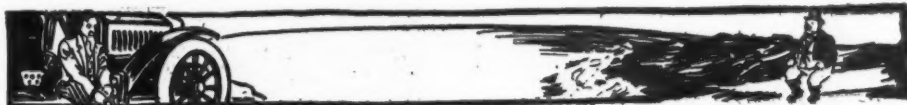
Although the writer favors a single casting for the four cylinders, in a moderate size engine he will suggest for the special case under consideration that the cylinders be cast separate with a skeleton water-jacket around the head, and be finished inside and out with a common waterjacket applied on the complete assembled unit, thus making a three-bearing crankshaft possible without undue span between the bearings and leading to a more compact and evenly cooled engine. To allow easy and rapid variations in speed, the crankshaft and the flywheel should be light, especially the latter, whose influence is great in slowing down and restarting for passing and negotiating curves, which we have mentioned as an important point for coming races.

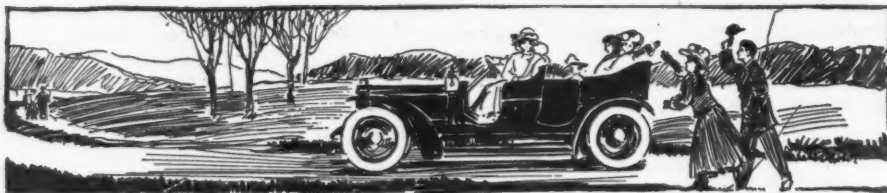
Ball-Bearing Crankshafts

The crankshaft will be mounted on three large ball-bearings. To make high piston speeds possible, the reciprocating parts will have to be of the maximum lightness. Although pressed steel pistons have attained quite a preëminence abroad, they are not likely to be universally used, and the writer's personal experience is that, with a mild close-grained material, a castiron piston finished inside and out can be made fully as light as any steel construction, and presents incomparable advantages as regards ease of running and security against seizing together with less abundant and easier lubrication. The connecting rod will be at least four times the crank throw, and preferably be cut from the solid in a roughly-shaped hand-forged alloy-steel billet. The recommended section will be tubular, and very little material left at the ends, which simply will have to hold the bushings, the latter being relied upon to provide the necessary stiffness to distribute the load on the journals. The piston end bushing will preferably be cast iron of the same grade as selected for the piston itself, and will not require to be very thick; the big end will preferably be of the full marine type and soft babbitt lined.

Not much need be said concerning the crankcase except that weight is gained and strength increased in these very high engines by carrying it quite high up the cylinder barrels, whose lower end is thus made very thin and acts merely as a liner to guide the piston.

A multiple-disk or a Hele-Shaw clutch will answer the purpose very well, especially considering the fact that too large flywheels,





even quite light, are not favorable to very high engine speeds, and, although steadier, are not desirable in the machine considered. But the writer would, nevertheless, favor a cork-insert cone clutch, even if a powerful spring is required as more certain in results and less affected by variations in lubrication. Locking pins should be provided, as in the Brasier cars, and a dashpot fitted to prevent reckless usage of this dangerous part, as well sometimes be made by even the most careful driver.

Chain-Drive Popular

The car will obviously be chain-driven. The percentage of chain-driven cars has steadily been increasing in European races and live axle victories have made themselves scarce. In a race run under engine limitation rules there is no room left for loss of power, and on account of considerably lesser unsuspended weight the chain gives a much better utilization and considerably reduces driving wheel slip.

The gearbox and differential will be in a compact casing close to the rear axle, to reduce chain length, and will be joined to the clutch through a shaft and two full universal joints. The jackshaft will also be universally jointed to accommodate frame torsions, and the chain brackets will be stiffly braced on the cross member to which the rear of the gearbox will be suspended. Four speeds should be provided, with direct drive on third and fourth, and the first and second should drive to the differential casing without returning to the primary shaft.

Concerning brakes, a set of internal expanding in the rear wheels and two-pedal actuated contractings on sleeves extended from the differential casing are long-established and satisfactory practice.

In respect to the running gear, high front wheels with narrow tires are conducive to easy running, and the adoption of similar front and rear wheels has no advantage of value to offset the advantage in speed derived from the construction mentioned in the foregoing.

Want Detachable Wheels

Although no decision has yet been arrived at by the ruling bodies concerning the wheel question, it appears that preference ought to be given the detachable wheel, if authorized, provided that the design of the rear hubs and sprockets is such that the drive be taken up as close to the rim as possible without undue strain on the spokes.

In the design of the car, considerable attention will have to be given to wind resistance. In respect to this it should be noted that slanting hoods and centrally located radiators are not of necessity de-

sirable shapes, although they may be means toward the end. In fact, one of the best studied cars in this respect in 1908 was the Mors, and it had its radiator in ordinary touring car location and shape. The radiator is a necessary evil as long as the rules will be such as to remove all chances for air-cooled cars, if they are to ever have any. A well-designed honeycomb or flat naked-tube radiator can be made with very little wind resistance, and of relatively small size, if the engine is properly designed, so that it can be left at its usual excellent place and the thinking be done on other parts of the machine. In the Mors case, the parts under the hood



Future of Paris Salon

Paris, Nov. 10—After holding a motor car show for 11 successive years, and making it the most attractive of all the public exhibitions held in France, constructors are beginning to ask themselves if after all it is worth while. At the present moment a circular is going through trade circles against the holding of any show in 1909. Those having signed it comprise a large proportion of the leading firms—concerns producing more than 100 cars per year. The curious feature of the anti-show move is that the firms popularly supposed to be at the head of it refuse to acknowledge any connection with the circular, and even those having signed, when questioned on the matter, assume complete ignorance. There appears to be a certain objection to continuing the show on the ground that it is too costly, and that the industry has now settled down to the same position as any other trade, and has no need of special demonstrations. Few, however, are willing to state these views openly. "If the other firms do not want a show, we can very well do without it," is the general view. In official quarters the possibility of the eleventh show being the last is laughed at. "If the salon were stopped money grabbers would step in and hold small exhibitions at which dealers would exhibit if the factories would not. The individual cost of the salon is so low that to abandon it would be folly," they say. Meanwhile exhibitors are looking at the electric light, decoration and wage bills, and wondering if it is worth while.

were all treated as if directly exposed in order to give the easiest possible flow to the intruding air. The slant of the footboards was carried to the height of the hood, and a large sheet aluminum plate fitted underneath to gradually deflect the air toward the ground to the rear, at the same time protecting the mechanism of the rear half of the machine. Externally the hood was continued by a sheet metal apron of other than haphazard shape coming close to the driver, protecting the occupants save for the driver's head, and thus annihilating the considerable windage which they often are left to offer, the protection of the hood and dashboard being lost at the distance the seats are from the latter. Considerable attention should also be paid to the rear shapes on which the air closes. This is a matter of elementary boat engineering, and yet Serpollet and Brasier probably were the first to think of it, and that after the building of many cars, which, although most carefully studied in their forward shapes, did not show any marked advantage over common construction.

To close this study, a word will be said on what is claimed to be an advantage of the foreigner over the American, that of practicing. This does not exist to the extent believed on this side. The advantage of the foreign driver resides mostly in the experience the engineers, in the factory behind him, have of the racing problem, which is entirely different from that of making a good touring car, and also in the fact that the cars are generally ready months before the race. This, however, does not imply high-speed practicing; the foreign driver tours with his car and gets sufficiently acquainted with it to feel "at home" behind the wheel. But the only real "test to destruction" takes place at the first race, and this explains the large quantity of mechanical troubles developing at the French race, which generally is the first of the season, in machines on which the drivers have had thousands of miles of so-called practicing without a hitch. It will be sufficient to mention the Fiat crankshafts and the Michelin detachable rims in the last French race, or the Hotchkiss axles in a previous instance, as striking examples.

That the American will have his word against the best foreigner, when the question will be handled with the same thoroughness here as it is abroad, is undoubted. The day should be close at hand, considering the impulse which the Locomobile victory and the creation of special roads should give to the question, and it is hoped that the foreign consideration of one side of the problem will be of some help toward the end.



MOVEMENTS OF GOOD ROADS ENTHUSIASTS

WASHINGTON, D. C., Nov. 14—Filled with enthusiasm over the excellence of American roads, Logan Waller Page, director of public roads, department of agriculture, returned this week from the international good roads congress in France, which he attended as chairman of the American delegation. Regarding the work of the congress, Director Page said to the Motor Age correspondent:

"Inasmuch as there were three official languages at the congress—French, German and English—it was impossible to make it much of a deliberative body. It was possible, however, for a general exchange of views on many matters pertaining to roads, and we were given the opportunity to inspect some of the great continental roads, and the methods of maintaining them. The international bureau of roads, which was one of the things accomplished by the conference, will have two or more representatives from each nation, and is patterned after the international bureau of navigation. The various members of the bureau will gather all the information regarding roads in their respective countries that may be of value, and submit it to the bureau. It will be gone over by experts, after which the information will be published and scattered all over the world for the benefit of the cause.

"I had the satisfaction of seeing pass a resolution, which I introduced, favoring the erection of a suitable memorial to the great French highway engineer, Tressauget. Tressauget preceded Telford and Macadam by 40 years, and in reality designed the broken stone road which is known as the Telford road. It was at his suggestion that the great system of what we call 'continuous repair' roads was established in France, and is still maintained. Under it a man, known as a cantonier, has charge of a certain section of the road, about 5 miles, and he goes over every foot of this daily, smoothing out irregularities, keeping the side drains clean, and trimming the trees and shrubbery by the roadside.

"The reason French roads are so much better than other roads—and this is a point that I wish Americans generally might realize—is that they are better kept up. The point to good roads is not so much their construction as their maintenance after they are built. So far as road construction is concerned no country today has better or more economical roads than the United States, but in the maintenance of them we do nothing. We build a road, then let it go to pieces, and build it over again. While there is considerable agitation for good roads in this country, there is little organized effort for them as yet. The best roads are in the 'state-aid' states; that is to say, states which have a road-maintaining fund, but there still re-

mains much to be done in the way of interesting state legislators in the improvement and maintenance of public thoroughfares."

Mr. Page will submit to congress an elaborate report as the representative of the United States in the recent good roads congress.

National Highway Movement

Spokane, Wash., Nov. 14—"Every motor club, commercial organization, good roads and farmers' association and state legislature in the country should lend its aid to the movement to build a national highway from the Pacific to the Atlantic, along the general route of the old Oregon trail as a memorial road to be known as the Pioneer Way, for which a bill, appropriating \$50,000 to mark the trail, is now on the house calendar at Washington, D. C., with excellent prospects of favorable action early next season, I have been told by prominent people."

Ezra Meeker, the veteran pioneer of the northwest, who, starting from his home at Puyallup, Wash., January 29, 1906, drove his team of oxen and prairie schooner into the White House grounds on November 29, 1907, and returning this year, covering 7,700 miles, made the foregoing observation during a recent visit in Spokane. Meeker and his party crossed the continent with an ox-team in 1843, and the old man is proud of his feat.

"Let Washington, Oregon and Idaho set the pace; others will follow. The trail traverses the states of Washington, Oregon, Idaho, Wyoming, Nebraska and Kansas. To get a continuous national roadbed over these seven states we must secure the co-operation of all of them as well as of the national government. We must formulate and adopt a plan that will be equitable and disarm criticism. We cannot expect the government to build a national highway through these states and refuse to build through other states, hence the proposed work may be said to involve the adoption of a national policy as to highways that will be applicable upon all trunk line roads throughout the national domain. It would be a monument to the pioneers of the old Oregon country to take the lead in this work.

"We want to interest everybody in this movement as the entering wedge to the greater work—the building of the great national highway; that while we, as pioneers, may work from sentimental motives, they, as practical business men, are fully justified in advocating the work from a commercial standpoint; that if we get the lesser work, the greater is sure to

follow in the fullness of time. We also want immediately to bring this measure before the legislatures of the seven states through which the trail passes, and not only secure a memorial to congress, but also action by each state favoring the greater work.

"Consider what such a work of building a transcontinental highway means. A road suitable for a motor way would also be suited for the farmer way, for the merchant way, for the school children way, for the tourist's way, for the way that would regulate railroads and foster independent action. Who can fathom the future? Who dares say the time is not near at hand when the trackless car will come into play for transferring freight long distances, and passengers almost as speedily and as comfortably as our railroads? It is only a question of the roadbeds. Given the good roads, the transformation is only a matter of detail and of time."

Good Roads Notes

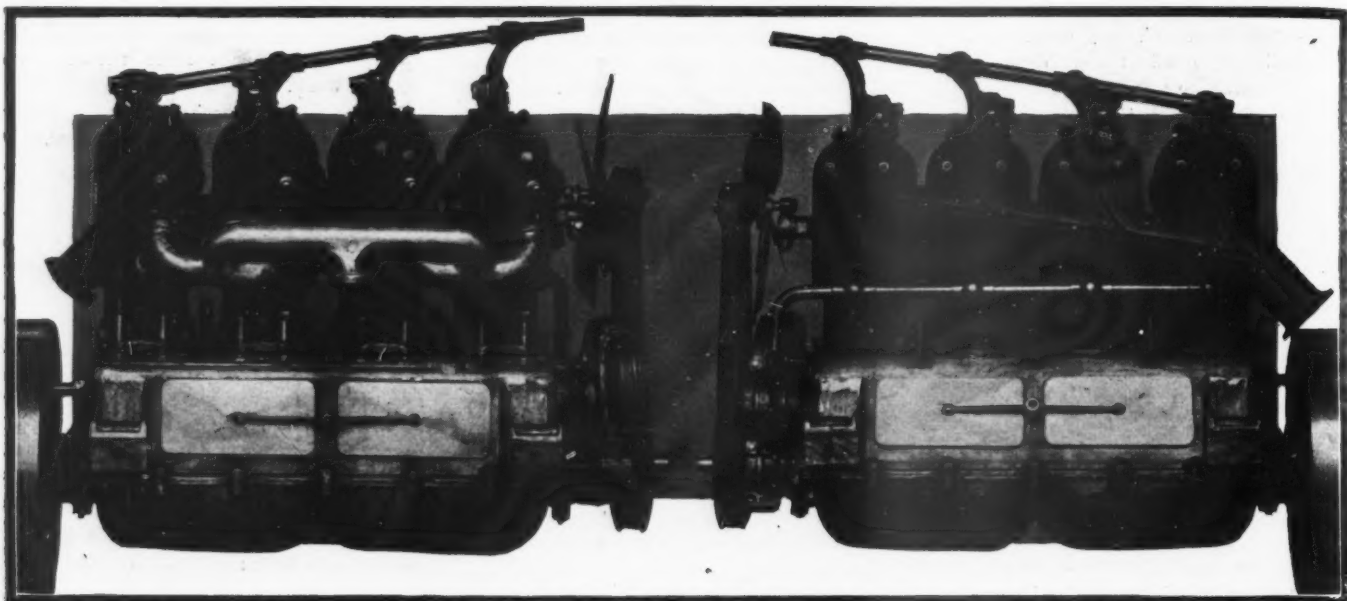
Several important contracts for highway improvements in New York state have just been let by State Engineer Skene at Albany. The Clarence Center road, not far from Buffalo, will be converted into a model highway and upward of \$59,002 will be spent on the work. There will be \$38,706 spent on the North Tonawanda-Shawnee road in Niagara county, near Buffalo. Thousands of dollars will be spent on several other roads at that end of the state. Members of the Buffalo Automobile Club have used an especially potent influence in creating sentiment in favor of ideal highways in the Empire state.

One of the latest plans for highway improvement in Wisconsin since the good roads amendment providing for state aid for highway improvement and construction was adopted at the general election, is to construct a 15-mile lake shore boulevard from Manitowoc to Two Rivers, Wis., along the shore of Lake Michigan. Owners of the two cities, with the aid of business men, are backing the work. This boulevard would in time become an important link in a chain of driveways from Chicago along Lake Michigan to Green Bay, Wis., and the scheme is receiving good support among the residents of the state of Wisconsin.

It is stated the LaCrosse, Wis., county board has decided to impose a tax on a continuous chain of good roads in the county which is regarded as an important step in road improvement progress.



MOTOR CAR DEVELOPMENT



INTAKE AND EXHAUST SIDES OF GREAT WESTERN MOTOR FOR NEXT YEAR

GREAT WESTERN cars for 1909, manufactured by the Model Automobile Co., Peru, Ind., are in three models of 25.6, 30.4 and 40 horsepower A. L. A. M. rating respectively. All are alike in the employment of a four-cylinder motor, selective gaset mounted centrally on the chassis and shaftdrive; but differ in not a few respects, particularly as to wheelbase, tire sizes, and spring arrangements, the 40-horsepower car having semi-elliptic springs front and rear, whereas the two smaller sizes have semi-elliptics in front and full elliptics in the rear. The three models are characterized by motors with individually cast cylinders having exhaust valves in the cylinder heads and operated by rocker arms; whereas, the intakes are in the bottoms of valve chambers on the right side of the cylinders; this, in reality, being one of the unconventional features of the motor.

It is of interest to note that the maker has aimed at low weight per horsepower and estimates the 25.6 car to weigh 63.3 pounds per horsepower, the 30.4 horsepower car to weigh 62.5 pounds, and the 40 to weigh 50.4 pounds. These estimates are not made on the horsepower figures given above, but on a rating of 30, 40 and 50 horsepower respectively for the three models.

Features of the Motors

All of the motors used have the customary two-part aluminum crankcase with two oblong inspection plates on either side, a central yoke, holding the pair on each side in place.

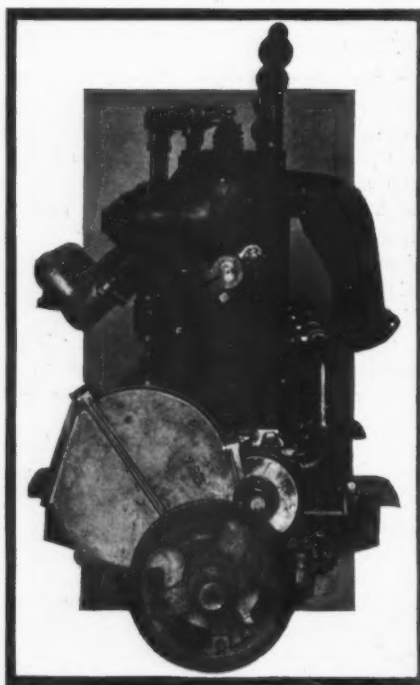
The crankshaft, offset $\frac{1}{2}$ inch from the center line of the cylinder, is carried between the halves and the studs, holding the

cylinders to the top of the case, pass entirely through the crankcase and hold the manganese bronze caps of the crankshaft bearing, so that the entire strain on the crankshaft caused by the explosions is taken on these studs and the manganese bronze, and not on the aluminum which is the case where either the bearing caps or the cylinder studs are threaded into the aluminum. Cylinders are reamed and ground to size and the pistons, besides being roughed inside and out, are annealed before grinding. Locating the exhaust

valve in the cylinder head allows of surrounding it with water, thereby greatly increasing its cooling facilities. The rapid escape of exhaust gases is aimed at by the use of a one-piece manifold, with a branch to each cylinder, which branches gradually increase in diameter as they leave the cylinder and join the main pipe, which also gradually increases in diameter as it approaches the dash. The shape is intended to permit of quick expansion of the gases. The crankshaft, a heat-treated forging ground to size and balanced before and after being attached to the flywheel, is carried on die-cast nickel babbitt bearings, the five carrying the crankshaft being made exceptionally long. Bearings of this type are also used for the connecting rods.

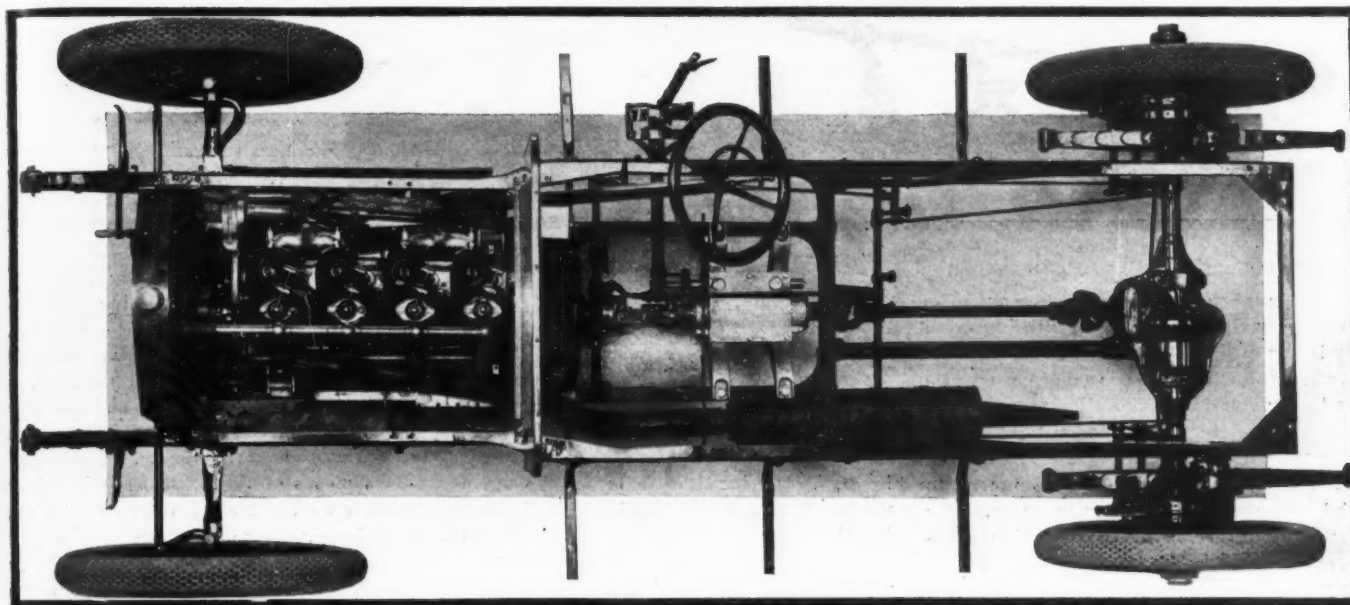
Operation of Exhaust Valves

Although the exhaust valves are in the cylinder heads and intake valves in side ports, both are operated from the same camshaft, which is gear-driven, the gears for it, the pump and magneto, being enclosed in separate oil-tight case, divided on an angle of 45 degrees, so that the pump and magneto gear may be removed, independent of each other, or the remainder of the gears. By removing this case cover and loosening a couple of nuts, the whole camshaft may be taken out from the front of the motor without interference with any of the other parts. In order to eliminate noise angle-toothed gears are used on the crank and camshafts. The exhaust valve stem, $\frac{1}{2}$ inch in diameter, has the top cupped out to receive the steel ball against which the inner of the valve rocker arm works, this ball being used for the purpose of reducing noise and to pro-



FRONT END GREAT WESTERN MOTOR

GREAT WESTERN MOTOR CARS



CHASSIS OF GREAT WESTERN CAR AND ALL ITS APPURTENANCES

vide against the wearing of the valve stem. The adjustable valve lifters for the intake valve are equipped with similar ball ends.

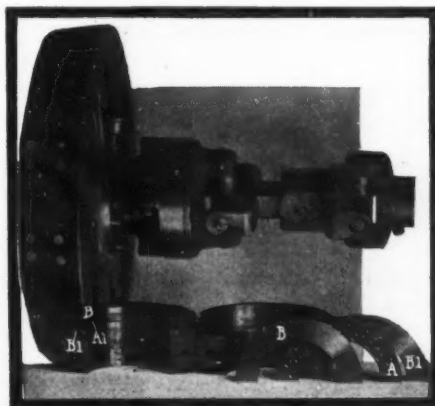
Nothing unusual appears in the arrangement and location of the motor accessories. The water pump is in front of the crankcase slightly at the left side, and delivers its flow to the bottoms of the waterjackets; the magneto is at the right front; the carburetor is centrally on the right, and the seven-feed mechanical oiler at the left rear, being ratchet-driven. The usual belt-driven fan to assist in the cooling is in place and has an adjustable support on the forward cylinder. Something new in the line of intake manifold is used, consisting of a T-piece, each arm of which is turned downward and expands into two integral branches connecting with the cylinders, the result being a compound T effect.

Cone Clutch Is Used

Use is made of a cone clutch faced with raybestos instead of leather and having a series of springs beneath to ease the engagement. A feature of the clutch is that it is released through a ball thrust bearing instead of a sliding yoke; this ball

thrust collar is of the split type, one-half shown in the illustration at A, and the other half at A1 being in place between hardened and ground thrust plates B and B1. Between the clutch and transmission is a double universal joint which allows of the usual sliding for disengagement. The cone part is a spoked affair, instead of a solid web.

The selective gearset, giving three forward variations and one reverse, is carried on the same subframe members which sup-



GREAT WESTERN CLUTCH

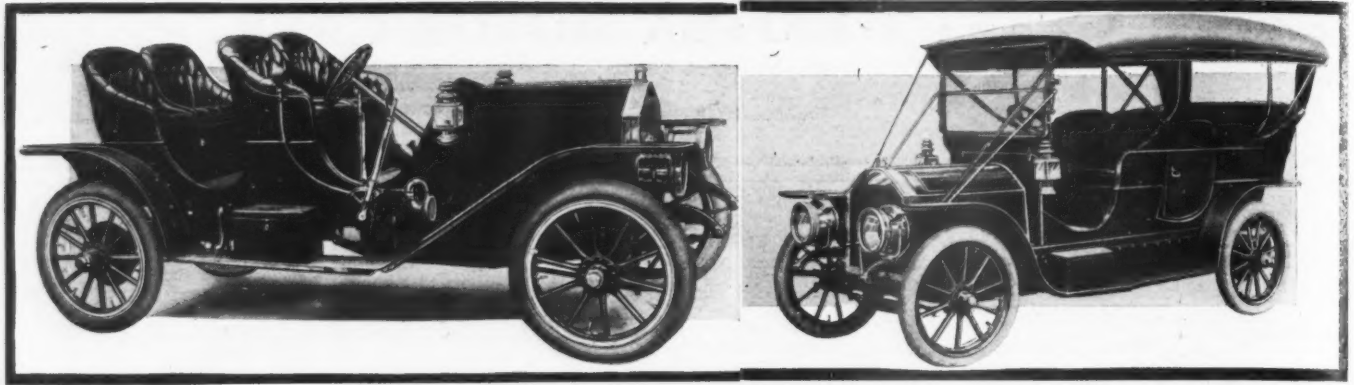
port the motor and uses nickel steel gears specially oil-treated as well as Timken roller bearings for both shafts. In this set the main shaft is carried on top, the countershaft beneath it and the two shifter rods on the right side. The countershaft gears are keyed in place and positioned by hydraulic pressure. They are spaced by tubular separators. The mainshaft is ground with four keys integral with the shaft and the spaces between them milled and hardened. Final drive is by propeller shaft with front and rear universal joints. The rear axle has its axle tubes riveted and brazed into the differential housings, the top half of which, as can be seen in the illustration, is removable, exposing the complete differential bevel. This housing is assisted by a truss-rod underneath. The pinion shaft is mounted between bearings, and a torsion bar, paralleling the drive shaft, is looked upon to care for the driving strain.

Brakes Work On Rear Axle Drums

Brakes are internal and external members operating on rear axle drums. The toggle arrangements for the contracting and expanding of the brakes are located in front of the axle, which gives a neat con-

SPECIFICATIONS OF THE GREAT WESTERN CARS FOR 1909

Model 20 Specifications		Model 21 Specifications		Model 22 Specifications	
Horsepower,	25-6	Horsepower,	30-4	Horsepower,	40
Cylinder diameter,	4 inches	Cylinder diameter,	4 1/2 inches	Cylinder diameter,	5 inches
Piston stroke,	5 inches	Piston stroke,	5 1/2 inches	Piston stroke,	5 1/2 inches
Wheelbase,	106 inches	Wheelbase,	114 inches	Wheelbase,	122 inches
Front tires,	32 by 3 inches	Front tires,	34 by 4 inches	Front tires,	36 by 4 inches
Rear tires,	32 by 3 1/2 inches	Rear tires,	34 by 4 inches	Rear tires,	36 by 4 1/2 inches
Front springs,		Front springs,		Front spring,	
Semi-elliptics, 38 long, 2 inches wide		Semi-elliptics, 40 long, 2 inches wide		Semi-elliptics, 40 long, 2 inches wide	
Rear springs,		Rear springs,		Rear springs,	
Full ellipitics, 38 long, 1 1/4 inches wide		Full ellipitics, 40 long, 1 1/4 inches wide		Semi-elliptics, 56 long, 2 inches wide	
Car weight per horsepower, 63 1/4 pounds		Car weight per horsepower, 62 1/2 pounds		Car weight per horsepower, 58.4 pounds	



TWO MODELS OF GREAT WESTERN CARS FOR 1909

struction when viewed from the rear. The forward axle is an I-beam forging with end thrust bearings in the top of the steering knuckle. Use is made of a worm and gear steering mechanism, the gear being a complete wheel forged in conjunction with its shaft and permits of bringing entirely new sets of teeth in contact with the worm should it become worn. The frame construction consists of side members narrowed at the dash to increase the turning angle and a subframe construction for carrying the motor and gearset.

The control rests with two leverettes on the steering gear for throttle and spark, the change speed and emergency lever at the right and clutch and regular brake clutch. The metal apron used for protecting the machinery has one side hinged and the other clamped to the frame, so that it may be dropped very quickly when access to the under part of the car is needed. The bodies used are of the straight-line type, four-passenger roadster style and three-passenger runabout.

MOTOR CAR LITERATURE

The Minneapolis Tribune' Hustler, a house organ devoted to the interests of that well known daily newspaper, has issued an interesting motor car number in which it devotes thirty-two pages to the industry and tells why it gives motor-

ing the liberal support it does. In one article it hits the nail on the head when it raps rival dailies which delight in "playing up" motor car accidents to the detriment of the industry. "The Tribune has long since quit the practice of featuring motor car mishaps as desirable news," it says. "Print the facts in the same manner as the other news is handled. That is all the reader demands and is all the motor car trade asks—get the prejudice out of your local staff, then out of the people. Abusing the motor car does not benefit the local dealer, the salesman, the manufacturer, your circulation department or the returns from your advertising columns, so what's the use? All things being equal, the motor car dealers and manufacturers have demonstrated their belief in reciprocity. They know that they cannot reap full benefit from the use of a paper that is continually fostering prejudice in the minds of its readers that they can from one that shows a disposition to boost the game."

Distinctly striking is the catalog describing the 1909 line of the F. B. Stearns Co., of Cleveland. The cover is simple yet artistic—a gray creation, the front page of which is adorned with the Stearns monogram in raised black letters, the well-known Stearns radiator, also raised, and

the slogan, "The White Line Radiator belongs to the Stearns." Inside one finds a series of well-arranged illustrations of the Stearns in various road contests, as well as a description of each model so plainly written that it is understandable to even a novice in motoring.

Two pieces of literature have just been sent out by the Holsman Automobile Co., of Chicago. One of them is the company's regular catalog, a neat, well-arranged booklet showing artistic taste in its creation, and the other a sort of edition de luxe in which the "New Holsman, the Gentleman's Automobile," is described. In the regular catalog the first page is devoted to a series of questions which is designed to bring out the features of the Holsman, the question in reality telling just what the high-wheeler can do on the road. There also is a page of illustrations showing the Holsman in service in foreign lands and another of scenes at the Algonquin hill-climb.

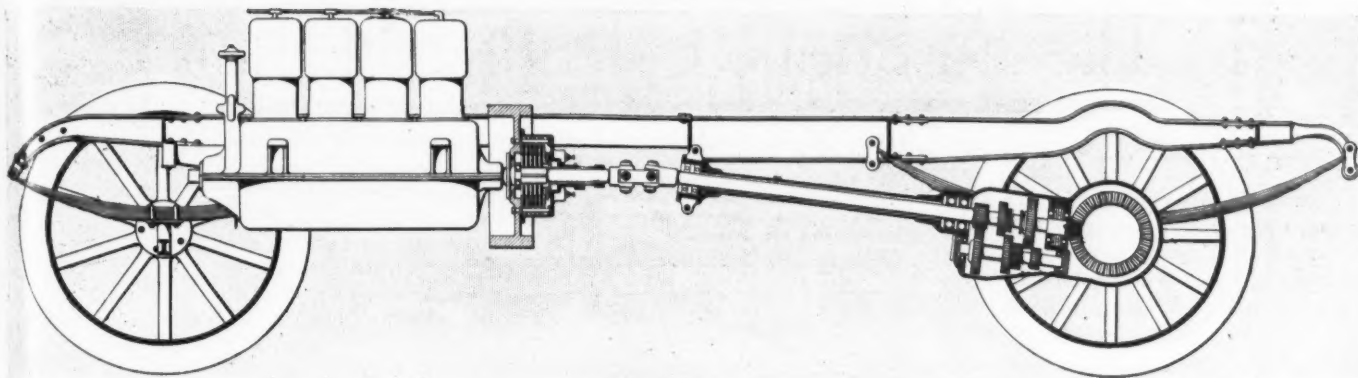
A pamphlet issued by the Standard Roller Bearing Co., of Philadelphia, is devoted to a history of the concern and its plant and the range it covers in its manufacturing business. An enclosure is a lithographed letter from George Schuster telling of the fine condition of the Standard company's bearing, used upon the Thomas Flyer, upon the completion of the New-York-Paris race.

Considerable artistic thought has been devoted to the new catalog of the Ford Motor Co., of Detroit. Printed on fine plate paper throughout and with a double cover of a blue-gray tint, lettered in white, the effort is a credit to the Ford company. The new model T has the right of way in the booklet and it is thoroughly described and illustrated. Also there is a chapter devoted to Vanadium steel, which is generally used in Ford cars.

"How to Bring up a Tire on a Bottle in 30 Seconds" is a humorous effort issued by the Goodyear Tire and Rubber Co., which is devoted to bringing out the merits of the Goodyear air bottle, for which it is claimed that "tires brought up on the Goodyear bottle are well brought up, too—better behaved—more healthy—live longer—do a good deal more work—save you a lot of money."



STERLING TOURING CAR FOR NEXT SEASON



SIDE ELEVATION OF STERLING CHASSIS, SHOWING GEARBOX INCORPORATED WITH REAR AXLE

The Elkhart Motor Car Co., of Elkhart, Ind., is manufacturing for next year two models of the Sterling cars—one model C, described herewith, intended for five and seven-passenger work, and the other model K of the same design, but differing only in horsepower and weight. The model C car makes use of a Rutenber motor of 36:1 horsepower, with $4\frac{3}{4}$ by 5-inch cylinders, cast separately and with integral valve chambers on the left side, calling for a single camshaft with integral cams and carried within the crankcase. The motor is of that improved design in which the oil pump is located in the crankcase compartment, providing a positive circulation oil system through all parts of the motor. The pump is driven by a vertical shaft at the right front of the motor. In turn from this shaft the magneto is gear-driven through exposed gears, the magneto being carried particularly high, the top of its magnets being well up on the cylinder side. The water pump occupies that characteristic position, on the forward end of the camshaft, so long used on Rutenber motors, and the intake water flow enters the jacketheads and beside the connections for the return flow, jacket partitions making a complete circulation imperative. On the left side is carried the Rutenber carbureter. Cooling is through a cellular radiator assisted by belt-driven fan and water pump. The double ignition system includes the magneto already referred to and the battery system, the one set of

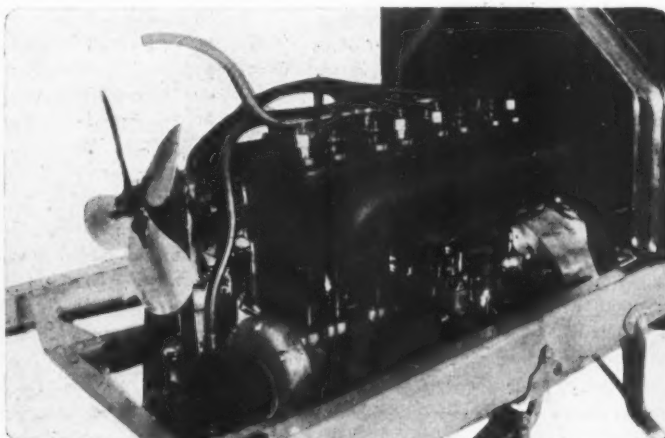
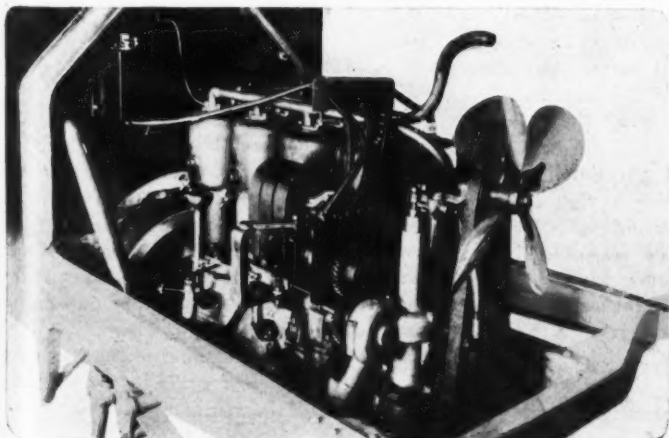
Sterling Model C

plugs being carried above the intake valves. The single unit coil incorporated is located on the front side of the dash under the bonnet.

Interesting in connection with the flywheel clutch is the use of a set of fourteen wood-fiber disks alternated with thirteen steel disks, both sets being encased in a 10-inch flywheel drum and operating in oil. The use of fiber disks after much experimenting and testing is looked upon to eliminate the quick engagement and scraping of the disks. Engagement is through four regularly-spaced coil springs, the adjustment of which is through set screws. The transmission system includes a three-speed and reverse selective set incorporated in the rear axle, and in conjunction with which the propellershaft is encased in a torsion tube, which at its forward end is supported from the cross members of the frame. Between the end of the torsion tube and the clutch is a double universal joint. The transmission set is a conventional affair, the differential housing and gear housing being an integral piece with a large top plate over the gearbox portion and a circular opening in the rear of the differential housing part. The latter opening is sufficiently large to allow the removal of the differential. The gearset uses chrome nickel steel gears mounted on shafts carried on

annular ball-bearings. The propellershaft is carried on a double race at its front and rear ends, and the pinionshaft in the rear of the gearset is also carried on a double race of bearings and has a thrust bearing as well. The rear axle construction is of the floating type and because of the propellershaft being encased in a tube, through which is transferred the drive of the rear axle on the frame, the rear springs are shackled at each end. These springs are in pairs, two on each side—one carried on the outside of the member of the frame and the other inside, so in reality there are four semi-elliptic rear springs, each 56 inches long and $1\frac{3}{4}$ inches wide. In front a single semi-elliptic spring is employed on each side, it being 40 inches long and 2 inches wide.

In the running gear use is made of a I-beam front axle, and in the domes of the steering knuckles are 1-inch steel balls held in place by bronze bushings, which balls carry the weight of the car at these points and tend towards easy steering. The frame is a pressed steel construction, varying in depth from a 5-inch maximum to the tapered ends where the spring hangers attach. To lower the center of gravity of the body the side members are arched over the rear axle. Brakes are internal and external members acting on the rear wheel drums, there being a separate drum for the external and internal members on each wheel with an air space.



STERLING MOTOR WITH HIGH MAGNETO LOCATION, AND SEPARATELY CAST CYLINDERS



The Readers' Clearing House



STORING CAR FOR WINTER

Bellingham, Minn.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me the proper method for storing a car in the winter? Should the air be let out of the tires and will it be harmful to let a storage battery freeze?—A Subscriber.

In storing a car for winter, take the storage battery out and have it fully charged. When charged, keep it in a room of a moderate temperature from 40 to 60 degrees Fahrenheit. At the end of 3 months have it recharged. There is little danger of the battery freezing, and should it there would be danger of disturbing the active material in the girds and so destroying the use of the battery. The proper method of handling tires is to remove them from the wheels and keep them in a room of moderate temperature in which there is not too much light and little moisture. The car should be jacked up. In case you do not care to remove the tires, jack up the car with four blocks of wood and partly deflate the tires. In another communication on these pages appears very useful information on the storing of a car for winter.

ELECTRIC LIGHTS MOST POPULAR

Menominee, Mich.—Editor Motor Age—Will Motor Age inform me what kind of illuminating lights are used in up-to-date garages, whether gas or electric, or both, and if there is any difference in the insurance risk in the different lights?—D. F. Poyer.

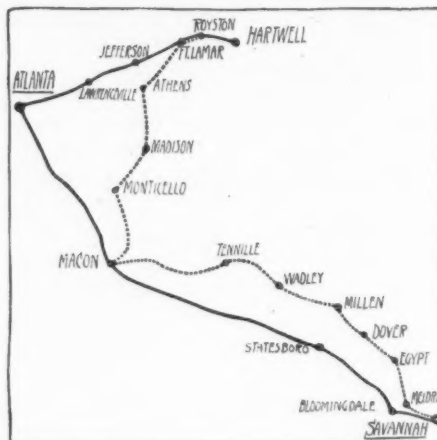
In the majority of up-to-date garages electric lights are used solely for illuminating purposes. The four-mantle gas-light is used in quite a few places and is quite safe, providing there is careful handling of gasoline and the light is well raised. Motor Age is not aware of any difference in insurance risks when electric light or gas jets are used.

METAL BODIES WELL LIKED

Stanford, Ill.—Editor Motor Age—Will Motor Age inform me which is the most popular style of motor car bodies—metal or wooden, which is the most substantial, and which is more generally used on the high-priced cars?—Ben Naffziger.

The most popular style of body is the sheet metal variety, in which sheet aluminum or sheet steel is secured to a wooden frame. Sheet aluminum is used on some of the highest-priced cars built in America. Cast aluminum bodies are used by some of the leading makers in the country, and this construction is firmer than sheet aluminum but somewhat heavier. Wood bodies have a good following but the trouble in connection with

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.



SHORT ROUTE TO SAVANNAH

them has been due to variations in temperatures at the different localities in which the cars must be used. As to which is the more substantial depends entirely on the workmanship of the body, there being several wood bodies more substantially constructed than sheet metal types. In limousine cars several of the highest-class makers in the country use wood throughout, while others use sheet metal and cast aluminum.

TROUBLE IN THE VALVES

Coahoma, Miss.—Editor Motor Age—I have a model N Ford runabout which is giving me considerable trouble in the way of timing or undue amount of play between valve and push-rod. The push-rods retain their normal clearance of 1/32-inch between valves until just before they raise the valves, when they drop 1/32-inch or more, thus giving too much play and causing irregular timing, as well as unnecessary noise or hammering. Some of the push-rods drop more than others. I have put in a new camshaft, push-rods, push-rod bushings, and valves, but without any amelioration of the trouble. Will Motor Age inform me what the difficulty is?—C. L. Montroy.

The reason of this peculiar knock is undoubtedly due to your having changed the valves from their original location when the motor was first assembled in the factory. In this motor the cams are formed integrally with the camshaft and being finished on a form grinder it would be impossible for any variation in their surface to exist. In timing the motor when it was assembled at the factory, it may be possible that one valve stem might be slightly lower than the other, or, to

get the timing correct, one stem might be ground off at the end more than the other to accommodate itself to the cam and the cylinder conditions. If, when you took the valves out, they were not returned to the cylinder they were first in, there would be an opportunity for the condition such as you described. Should this not prove the case, it may be there is some sticking of the lifter-rods in their guides. Motor Age would be particularly glad to hear from other readers as to possible cause of this trouble.

LEVER MAKES GOOD JACK

Marinette, Wis.—Editor Motor Age—Will Motor Age explain some good way to jack up a car when wheels drop into mud to the hubs? In such a case it is impossible to get a jack under the axle without digging, and this many times is unsuccessful for want of tools, or because the jack keeps sinking.—J. A. Cook.

The best way to jack up a wheel when it drops to the hubs in mud is to secure a block of wood of any nature which serves as a fulcrum and get a fence rail, scantling, or any other piece of wood, to serve as a lever. The block of wood is placed on the ground near the axle, the short end of the rail placed under the axle, and power applied to the long end. It is frequently better to do a little digging before resorting to this tactic. In case it is impossible to get rails a good solution is to dig beneath the axle and place a square piece of board on the ground, so that the jack can be mounted upon this board. The same course of procedure follows in the case of sand. It often happens that when the wheel is raised a few inches in this way, it is impossible to hold it until a fresh hold can be taken with the lever, and it is well to have some stones, or short pieces of wood, so that they can be pushed under the wheel when lifted. After the wheel is raised 6 or 8 inches this way, get a 6-foot length of plank, and place one end under the tire and the other end extending toward the front wheel, so that when the car starts it will run on this board.

FINDS THE KNOCK

Chicago—Editor Motor Age—After considerable annoyance I discovered the cause of a knock in my two-cylinder car, and, as I never have seen such an explanation given, I submit it for the benefit of suffering motorists. I have a two-cylinder Queen car, chain-drive with full elliptic springs, the rear springs being pivoted to the body so as to allow the rear axle to be brought forward or back by altering the length of the radius rods. The knock was caused by worn connections at the forward ends of the radius rods, allowing

some little play. This produced no knock with the motor running idle, and no knock was noticeable on low gear; but on direct drive at low speed an aggravating knock developed, gradually becoming less noticeable as the speed increased. This would indicate that the spark was too far advanced, but delaying the spark to stop the knock heated the motor too much.—F. L. McCune.

SOLDERING ALUMINUM

Kimball, Minn.—Editor Motor Age—Will Motor Age inform me if it is possible to solder or weld aluminum and if so where I can obtain the material? I have a 1907 Maxwell runabout in which a small corner of the aluminum housing of the crankcase is broken off, having been cracked by a careless repair man. There is practically no strain on this part of the housing, but I do not care to go to the expense of buying a whole new housing if I can avoid it, as it would cost about \$60.—Geo. E. Sherwood.

It is quite possible to solder or weld aluminum. The Autogenous Equipment Co., Springfield, Mass., does this work by its special system. The best method of having the matter attended to would be writing direct. In another inquiry on these pages is given a list of concerns which manufacture solder for this work, and it might be with the use of one of these you could do the job nearer home.

SELL ALUMINUM SOLDER

Oelwein, Ia.—Editor Motor Age—Will Motor Age tell me where I can purchase aluminum solder.—G. H. Phillips.

The following concerns make aluminum solder: Aluminum Solder & Refining Co., Oswego, N. Y.; City Brass Foundry Co., Cleveland, O.; Clum & Atkinson, Rochester, N. Y.; International Solder Co., Syracuse, N. Y.; Janney, Steinmetz & Co., Philadelphia, Pa.; E. F. Lester Co., Fayetteville, N. Y.; Lumen Bearing Co., Buffalo, N. Y.; C. B. Thwing, Philadelphia, Pa., and United States Bronze Co., Cleveland, O.

STORING A CAR FOR WINTER

Chicago—Editor Motor Age—Probably some subscribers like myself will shortly lay up their cars for the winter in a cold barn. Some hints as to keeping the brass work from tarnishing and the steel parts from rusting would be very acceptable—S. F. M.

This is a most pertinent subject, for a car stored in a cold barn should be looked after more carefully than one left in a warm garage. One who is well informed on the subject, O. K. Wight, of Chicago, manager of the Official garage, recommends that all brass parts be treated with three or four applications of good brass polish, which should be left on for the winter while the car is in storage. The steel parts should first be cleaned with kerosene and then "doped" with vaseline. In case the tires are left on the

wheels, they should be deflated and the car jacked up until all four wheels are off the ground. In case, however, you wish to take extra good care of your tires, take them off and wrap each one in bandages, which should be well sprinkled with sulphur. As regards the oil and gasoline in the lubricator and tank, it doesn't matter much whether they are left in or drained off, although as a precautionary measure it would be safer to drain the gasoline. As to the care of the cylinders themselves, it is suggested that they be filled with kerosene which should be left in as long as the car is out of commission. Of course, every ounce of water should be drained out of the water system, for Jack Frost is only too eager to take advantage of carelessness in this respect.

MOTOR AS WELL AS PUMP

Geneva, Ind.—Editor Motor Age—In answer to the communication in Motor Age, issue of November 5, page 12, on "Motor Pumps Cistern Water," I enclose a crude illustration of how I have my motor do the pumping for a 130-foot well, using only a common force pump. I make use of a 4-inch die pulley in the mainshaft of my two-cylinder engine, a 3-inch belt to a 36-inch pulley on shaft for this pulley and an old mower wheel, first knocking off the rough treads of the last named. I also use an iron piece $1\frac{1}{4}$ inch for my shaft, bending a $2\frac{1}{2}$ -inch crank on it, which gives a 5-inch stroke. From the crank I use a pitman to a walking beam with another pitman running to the pump. The entire expense was about \$2 besides my own labor, with satisfactory results. The water is carried to the tank through a hose.—J. L. W.

ANOTHER ROUTE TO SAVANNAH

Athens, Ga.—Editor Motor Age—In Motor Age, issue November 5, under the head of "Motor Trail from New York to Savannah," the writer laid out a path through Georgia that I think can be shortened considerably, and which route I am glad to give for the benefit of fellow motorists. Instead of going by Atlanta, start at Royston, Ga., and go thence to

Fort Lamar, Ia., Neese to Athens. From Athens follow the Central Georgia railroad to Macon and thence to Savannah. I have traveled over this route many times in a motor car and found the roads as good as any in this section, especially those from Athens to Macon.—B. T. Epps.

WANTED—A RATTAN SEAT

Macomb, Ill.—Editor Motor Age—Can Motor Age tell me where I can secure a rattan seat for a model F Jackson runabout, to take the place of a rumble seat? Is there any way of adjusting the oiler on a Davis engine used on this same model, and on the Lambert 18?—H. Bolles.

Motor Age does not know where you can secure a rattan seat for your model F Jackson car, but, for your information, the United States Rattan Co., Hoboken, N. J., makes figure cane work suitable to put on the outside of the seat used on that model. The oiler used on this model is non-adjustable; that is, it is adjusted before it is put in the car, and should feed properly.

WASTE OF ELECTRICAL ENERGY

Indianapolis, Ind.—Editor Motor Age—Through the Readers' Clearing House will Motor Age state how much electrical energy is wasted in the series resistance when charging a single 6-volt 60-ampere hour storage battery from a 110-volt direct current circuit? What would be the objection to operating a make-and-break sparker directly from a 110-volt circuit provided the coil was wound to a sufficiently high resistance so as to allow only the required amount of current—ampere—to pass?—Claude S. Swain.

When charging a 6-volt 60-ampere-hour battery from a 110-volt circuit the waste of electrical energy is very great; in fact, more than 300 watts are wasted, being transformed into heat in the resistance. It is just as cheap to charge fourteen 6-volt 60-ampere batteries at one time from a 110-volt circuit as it is to charge one battery of this type. This may be explained in this way: In a 6-volt battery, the voltage will build up during charging to as high as $7\frac{1}{2}$ volts. The current con-

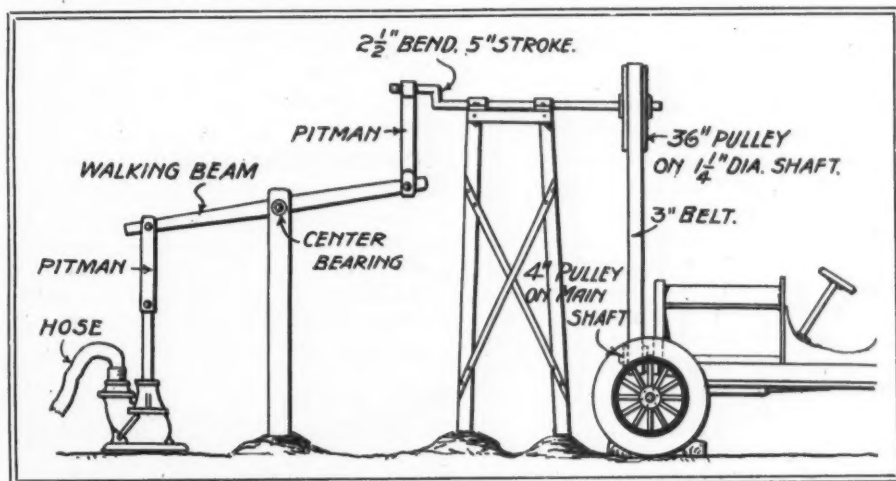


DIAGRAM ILLUSTRATING USING A MOTOR AS A PUMP

sumption at a 3-ampere rate is 3 multiplied by $7\frac{1}{2}$, giving $22\frac{1}{2}$ watts. Taking this current from a 110-volt circuit, the electrical consumption is 110×3 , or 330 watts. Of these 330 watts but $22\frac{1}{2}$ are used, $307\frac{1}{2}$ being wasted in the resistance. In operating a make-and-break spark, such as is used on a low-tension ignition system in a car, there is an enormous waste in using 110 volts, because 6 to 8 volts are sufficient. The reason of this waste is as enumerated. A still greater danger would be that with this high voltage, unless the distance between the contact points and the combustion chamber was great, there would be danger of the current bridging the gap.

SPARK PLUG INFORMATION

New York, N. Y.—Editor Motor Age—In Motor Age, issue November 5, page 13, a "Subscriber," LaCrosse, Wis., asked for information relative to where he could obtain a spark plug using a substitute for porcelain or mica. For his information, the Anderson Spark Plug Co., Washington, D. C., manufactures a glass insulated spark plug, which is known as the Anderson glass plug.—R. S. Drake.

MAKES 60-INCH TREADS

The Adams Co., Dubuque, Ia., makes cars with 60-inch treads at a slight additional cost. This is for the further information of Mr. Vrooman, who asked for such in the issue of Motor Age, November 5.

WHY MOTOR HEATS

Bismarck, N. D.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me what is the trouble with my home-made runabout in which I am using a Beaver opposed $5\frac{1}{8}$ by $4\frac{1}{2}$ -inch motor and friction-drive transmission, and am also using 34-inch rolls rubber tires. My car ran well for about 2 months, then it began to pre-ignite with the throttle open when climbing hills. As it kept getting worse I changed the spark plugs and timer but this did not help. Thinking there was too much carbon in the cylinders I put kerosene in them several times, letting it remain over night; then I tried some decarbonizer; finally, I took the cylinders out and scraped all the carbon off, all of which had no effect upon it. The water circulation is good, the water coming to a boiling point when going with a hard wind and climbing hills. I have an idea the motor gets hotter than it should. I have a large radiator and the gear pump forces a good stream through both cylinders. When starting out it will not trouble me on the first hill, but later it will pre-ignite as soon as I open the throttle over half, and if I keep the spark well retarded it will not pre-ignite so soon. I have trouble

with both cylinders pre-igniting at the same time, which I cannot understand. It seems to me as if the water system is at fault; the radiator and pump do their part well, taking discharge hose from radiator it shows a large stream of water, which I cannot hold back if I place my thumb over the hose. The explosions make the cylinders so hot that the water cannot keep them cool and it will stop pre-igniting as soon as throttle is closed about half.—F. J.

The undoubted trouble which causes your pre-ignition is the accumulation of carbon in the cylinders, which is due to feeding too much oil. If in removing this carbon, besides removing it from the cylinder walls and the heads of the combustion chamber, examine carefully the exhaust valve seatings and see that nothing remains at these points. Should you convince yourself that it is due to this cause, it may be that the trouble lies in the timer, which gives a spark earlier than desired. This can be discovered by removing a spark plug and seeing at what point in the piston travel the spark occurs.

LOOK AT WATER PIPE

Madison, So. Dak.—Editor Motor Age—Referring to P. W. K.'s inquiry in the Readers' Clearing House, Motor Age, November 12, page 16, in regard to his motor pounding under load, I would state I have experienced a similar difficulty with a two-cylinder Buick. To locate the cause was a very perplexing proposition, and I tried every remedy, but without result. Finally, I examined the pump gears and though they were not much worn I thought the water did not circulate as it should, causing the motor to heat up under load. A new set of pump gears remedied the trouble entirely. I do not know what kind of a water pump P. W. K. has on his engine, but I would suggest the above remedy as worth trying at least.—H. H. Frudenberg.

MAKES YANKEE GRADEMETER

Vassar, Mich.—Editor Motor Age—Will Motor Age advise me where and by whom the Yankee grademeter is made?—Reliance Milling Co.

E. J. Willis, 8 Park place, New York, N. Y., is the maker of the Yankee grademeter.

LOOK AT TIMING GEARS

Tonti, Ill.—Editor Motor Age—I have a four-cylinder model 34 Rambler, which has been run about 2,000 miles this season. Recently it developed a knock or click similar to a spark click. When started cold the motor will run from 5 to 8 miles quietly, then it will begin to



knock, and more so when running light than on a hill or pulling hard. Advancing or retarding the spark lever has had no effect on it. In fact, when throttle and spark are both closed, it still pounds. This would indicate a carbon knock. Cleaning the cylinders with kerosene, also with Prest-O-Carbon has had no results. Shafts, wrists and all bearings were gone over and adjusted. The Holley carburetor seems to be working fine; have not touched it for several weeks and then only to lower the float; am using a Vesta 6-volt 60-ampere battery. I am feeding three drops of the best oil to each stroke of the pump. There has been no overheating, the motor always running cool even at high speed. As this knock is very annoying, will Motor Age help me to locate the difficulty?—J. B. Brokaw.

From what you say it looks as though the trouble may be due to backlash in the timing gears, caused by wear, which may have been occasioned by not sufficient lubrication. What makes this appear to be the trouble is the fact that when running idle with throttle and spark both closed the pound is still there. Should this not be the case, it may be you have a loose flywheel. From the first part of your statement, in which you say there is no knock for the first 5 or 6 miles, it would seem that the trouble is due to carbonization. You may have used kerosene and Prest-O-Carbon, but not succeeded in sufficiently removing the carbon. You are feeding approximately the correct amount of oil for this motor. Had you not said the motor always runs cool, it would have been the most natural inference to conclude that there was a clogging, or impediment of some nature in the cooling system. However, your final statement entirely eliminates any possibility of this nature. Sometimes a motor is running hot without the driver being aware of it. Look over the water system. Detach the hose at the base of the radiator and see if the water flows through the radiator freely.

"SUBSCRIBER," PLEASE ANSWER

Will "Subscriber," whose communication appeared on page 13, October 22 issue, regarding smoking of his air-cooled car, communicate directly with the manufacturers of the car or with this office, giving name and address?

WAS MADE IN ST. LOUIS

Waterman, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me the name and address of the manufacturers of the Everybody motor car?—Glenn Fuller.

The car you speak of was manufactured by the Success Auto-Buggy Mfg. Co., 528 De Baliviere avenue, St. Louis, Mo.



Brief Business Announcements



Jacksonville, Fla.—Ramm's garage has been opened here.

Dayton, O.—The Dayton Motor Car Co. has increased its capital stock from \$50,000 to \$500,000.

Pittsburg, Pa.—L. G. Martin has closed a contract for an addition to his garage at 3923 Forbes street.

Albany, N. Y.—The Hygrade Rubber Bicycle and Automobile Supply Co., of Troy, has been incorporated with a capital stock of \$10,000.

Philadelphia, Pa.—Plans have been filed for the erection of an addition to the garage of Louis J. Bergdoll, of Broad and Wood streets, to cost \$30,000.

Detroit, Mich.—The Racine Boat Mfg. Co. has been appointed agent for the Richmond car. The headquarters of the company are at 182 Jefferson avenue.

New York—The Cadillac Automobile Co., now located at Broadway and Fifty-first street, is to remove to new quarters at Fifty-ninth street and Columbus circle.

New York—A petition in bankruptcy has been filed against Max Wineburgh, doing business as the American Automart, of 1621 Broadway. The liabilities amount to \$10,000.

Princeton, N. J.—K. Kurkjian, who has been connected with the Princeton garage, has severed his connection with that concern, and is about to go into business for himself. He will open a supply store at 2 Nassau street.

Boston, Mass.—A. B. Henley, who is the manager of the local branch of the Franklin company, has announced the removal of the company's repair shop from 61 Wareham street to the Copley garage at 31 Irvington street.

New York—The Buick Automobile Co. has leased for a term of 5 years the premises at 635-637 West Fifty-first street, and will occupy it as a garage and storage warehouse as soon as the necessary alterations are completed.

New York—I. M. I. Uppereue, who has been the agent for the Cadillac car in Newark, N. J., has secured the agency of that machine in this city, and will shortly open up a new salesroom here. E. H. Brandt is to continue as sales manager.

Elmira, N. Y.—The Southern Tier Motor Co. has been organized with a capital stock of \$25,000, and will take over the entire business of the Willys-Crew Motor Co. and the motor car department of the Elmira Arms Co. Guy Shoemaker has been elected president of the new concern, and H. K. Crandall, formerly of Athens, is to be secretary and treasurer. The new concern is to handle a general line of cars,

and will be special agent in a large territory for the Overland car.

Des Moines, Ia.—The Boone Automobile Co., of Boone, has filed articles of incorporation.

Wilmington, Del.—The Bradford Automobile Co. has just concluded a contract with the E-M-F.

New York—The De Luxe is about to open an agency in this city on Broadway, near Fifty-second street.

Harrisburg, Pa.—The Union Auto Repair Co., of Pittsburg, has been incorporated with a capital stock of \$5,000.

Pittsburg, Pa.—The East End Automobile Co. is to erect a new garage at 5902 Baum street. The estimated cost of the new building is \$8,000.

Pittsburg, Pa.—The Duquesne Construction Co. has been granted a contract for the erection of a new brick garage for Leon C. Faulk, to be built at 242 Atlantic avenue.

New York—Charles I. Scott, who has been selling motor cars on commission, with headquarters at 1779 Broadway, has filed a petition in bankruptcy, with no assets, and liabilities of \$19,936.

New York—The Motor Car Repair Co., which for the past few years has been making a specialty of repairing cars of all makes, is about to go into the manufacture of a car on its own account. The company is now located in its new factory at 509-515 West Fifty-sixth street. The new car is to be known as the Prodal,



New York—Columbus Garage and Motor Co., capital stock \$15,000; to deal in motor cars.

New York—American Eagle Motor Car Co., capital stock \$5,000; to deal in motor cars.

Trenton, N. J.—Maxwell-Briscoe-Cleveland Co., of Jersey City; capital stock \$2,500; to manufacture motor cars and parts.

Springfield, Mass.—C. A. Coey Co. of Chicago, capital stock \$75,000; to manufacture motor cars and accessories.

New York—Imperial Taximeter Co., capital stock \$6,500; to deal in and rent taxicabs.

New York—Rapid Motor Transportation and Maintenance Co., capital stock \$50,000; to manufacture motors, engines, machines, and do a garage and express business.

Bucyrus, O.—Bucyrus Transportation Co., capital stock \$5,000; to run a motor transportation line.

Jersey City, N. J.—International Taximeter Motor Cab Co., capital stock \$250,000; to conduct a taximeter cab business.

Troy, N. Y.—Hygrade Rubber Bicycle and Automobile Supply Co., capital stock \$10,000; to manufacture rubber goods of all kinds.

Indianapolis, Ind.—Best Automobile Co., capital stock \$20,000; to deal in motor cars.

Homestead, Pa.—Triumph Automobile Tire Co., capital stock \$1,000,000; to manufacture a new tire of solid construction. The company has also taken out a charter in West Virginia.

and two types will be made, a commercial and a pleasure vehicle.

Chicago—The Union Taxicab Co. has increased the number of directors from five to seven.

Boston, Mass.—The Taxi Service Co. is about to increase its capital stock from \$120,000 to \$350,000.

St. Louis, Mo.—The Franklin Motor Car Co., of Kansas City, has been incorporated with a capital stock of \$10,000.

Columbus, O.—The Herschede Motor Car Co., of Cincinnati, has been incorporated with a capital stock of \$50,000.

Wilmington, Del.—The Co-Operative Automobile Co., of Pittsburg, has been incorporated with a capital stock of \$25,000.

Indianapolis, Ind.—The Dewitt Motor Vehicle Co., of North Manchester, has been incorporated and will engage in the manufacture of motor vehicles.

Council Bluffs, Ia.—Henry Sperling, who for some time has been the local agent for the International motor buggy, has added the Detroit electric and the Jackson to his list.

Chicago—The Levy & Hipple Motor Co., which is now located at 390 Wabash avenue, has purchased the property at 1467 Wabash avenue, and will erect its own building. The company has the agency for the Chalmers-Detroit, the Lozier and the Autocar.

Babcock in Badgerland—The American Automobile Co., 187 Wisconsin street, Milwaukee, has been appointed agent for the Babcock electric vehicle line in Milwaukee and Wisconsin, succeeding the Electric Vehicle and Power Supply Co., 621 Grand avenue, Milwaukee.

New Milwaukee Garage—Charles C. Mayhew and George F. Gerlach, conducting the Wisconsin agency for the Studebaker and E-M-F lines under the name of the Ogden-Farwell garage, have opened their new store at 82-86 Farwell avenue, near Ogden avenue, Milwaukee.

New York—The Knickerbocker hotel has installed its own taxicab service. The new concern is to be known as the Universal Taximeter Cab Co. J. H. Staek is the president of the concern; J. H. Norton, treasurer, and J. F. Mulgrew, secretary. The cabs are manufactured by the Argyll Motor Co., of Scotland.

Baltimore, Md.—C. E. Smith, who has been connected with the Farmers' National bank for a number of years, has severed his connection with that institution, and will go into the motor car business. He has been appointed manager of the White Garage Co., which position carries with it the southern agency for the White Co.

THEORY AND PRACTICE IN CAR SPRINGS

WERE springs perfect, with never a spring failure, the accessories, known as shock absorbers, would scarcely have found a footing in connection with the motor car. Shock absorbers were originally devised in connection with railroad trains, in conjunction with the couplers connecting the cars, to enable the locomotive driver to start one car at a time. It is hardly necessary to point out the long train of cars could not be started by the engine were the couplings rigid, thus requiring the simultaneous acceleration of the whole train of cars.

Couplers with a simple loss motion were tried in the early days, and, of course, the lost motion enabled the locomotive driver to take advantage of the same, with a view to starting one car at a time. It was soon found, however, that the cars were unable to stand the shocks, and the spring bumpers, so called, came into vogue as a result. The spring bumper served very well for a good many years, but it always possessed the disadvantage of engendering oscillations, since it is true that the energy stored in a spring will be given up again, less the amount represented by the inefficiency of the process. To obviate this difficulty, laminated friction plates were placed in conjunction with the springs in such a way as to permit the springs to act, but the energy stored in the springs as a result of that action was dissipated by the friction of the laminated plates. In this combination will be found the source of the so-called shock absorber as used in motor cars, and, as a matter of fact, its widest application today is in connection with railroad trains used to dissipate the energy of the coupler springs to kill the longitudinal oscillations.

Solving the Weight Problem

In connection with the motor car, to consider the use of so much weight in the shock absorber system as will be found in the shock-absorbers of railway cars would be out of the question, and since the weight of the shock absorbers must be something to take into account, if they work, while if they fail to work it is a crime to supply the requisite quantity of material for the purpose. There are two ways of solving this problem, the one of which is to use enough material for a direct application as they do in connection with railroad cars, the other of which is to apply pressure to a nest of circular disks or laminated plates, so connected with the lever system and linkages as to multiply the effect of that pressure for the purpose. Certainly the principle of lever advantage can be used to a very good purpose, and the fine examples of shock absorbers take this into account.

Shock absorbers of the friction type work both ways as a rule, which means that the springs are snubbed both in action and in reaction. This is a matter

EDITOR'S NOTE—This is Part III, of an article specially prepared by Thomas J. Fay, president Society Automobile Engineers, on the Theory and Practice of Spring Suspension. Part I appeared in Motor Age November 5, pages 18 and 19 and Part II in November 12.

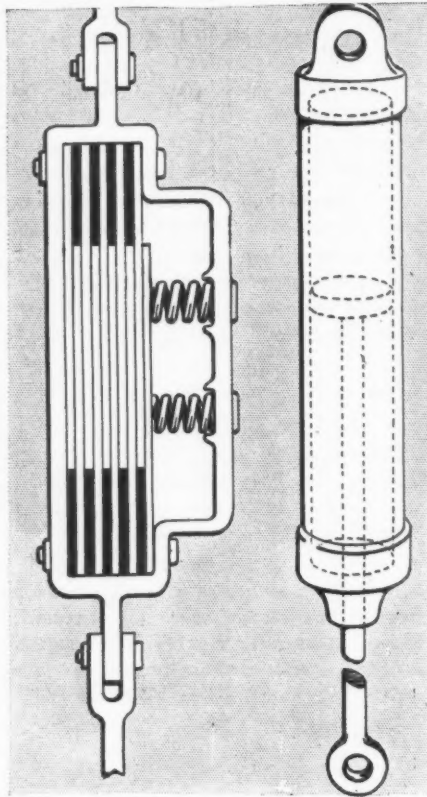


PLATE AND DASH POT SHOCK ABSORBERS

that might be regarded as an advantage, excepting under certain conditions. As, for illustration, if a car in negotiating a series of depressions, happens to be of a wheelbase, considering the speed of travel, such as will set up a synchronizing periodicity, then it is plain that the friction type of shock absorber can prevent the springs from reacting within the period of time necessary to the process, with but one result, that is, shock. This condition can be evaded by a chauffeur possessing enough skill to pilot an ox-cart, and it should be evaded, since, forsooth, one cannot tell what will happen to a car during the instant of spring failure.

There are shock absorbers of the class in which the dissipation of energy, by means of laminæ of plates or disks, does not take place. In this type of shock absorber springs or dash-pots are set to snub the reactive tendencies only. If springs, they may be of the helical type, working direct, or through a lever arm, and they may be simple or compound. A simple helical spring differs from a compound in that, in a simple spring the pull in pounds will be in direct proportion to the elongation or the compression, as the case may be; whereas, in a compound

helical spring the pull in pounds increases disproportionately with the compression. The action of a spring so set is to limit the reaction of the spring suspension proper, the extent of which reaction in the shock absorbers may be greater than the direct action of the springs, as is shown in the bumpometer record. This reaction if not snubbed is probably the most potent factor for spring failures; the main leaves of the semi-elliptical springs in the absence of retainers are called upon to take the load under conditions of camber, indicating extreme fiber strains. The use of retainers modifies this individual action on the part of the main leaves, but the retainers do not serve as a cure for the evil, whereas the shock absorbers are specifically placed to limit the action, and if they are properly designed and suitably installed they will serve the purpose.

Spring Makers Interested

There are several examples of springs in which the shock absorber feature is confined; in other words, the more ingenious of the spring makers are endeavoring to so design the springs proper as to eliminate the need for shock absorbers. The Perfection spring, as made by the Perfection Spring Co., of Cleveland, O., is an example of what can be done by way of affording springs capable of resisting adequately in reaction as well as in action. Another scheme for accomplishing more or less the same purpose is effected by simply reverting the full elliptical springs at their ends, instead of using hinges. Retainers serve to a considerable extent for the same purpose, because they bring the short leaves into play in reaction, whereas without the retainers the main leaves would have to do all the work.

In recent times the idea of the cushion pneumatic spring has been developed to a certain state of perfection, and this spring will work just as well in reaction as it can work under the direct lead. It seems to be satisfactory in truck work where it has been tried out, and a little experience along this line may indicate further successes. There is one other type of spring which is suitable for use in reaction, namely, the flat band coil—clock—spring. This product seems to be favorably considered by some motorists, and there is scarcely any reason why it should not do the work. Some experiments conducted in New Jersey last year, under the direction of J. M. Ellsworth, were with a view to ascertaining the extent to which shock absorbers would govern the action of springs and indicate the much desired level platform. The reaction involving a standard touring car of good characteristics as indicated on a bumpometer designed for the purpose, showed that the reaction from the normal static position was considerably more than the downward motion.

Some of the tests showed that the reaction was 50 per cent more than normal downward motion from a static point, and repeated trials seemed to indicate that, with the shock absorbers, when properly adjusted, the reaction was kept within one-half of the normal downward motion, considering the normal static position at a base line. A common complaint made at that time was one that had for its basis the lack of permanency of adjustment of the shock absorbers, they were capable of doing the work were they properly adjusted.

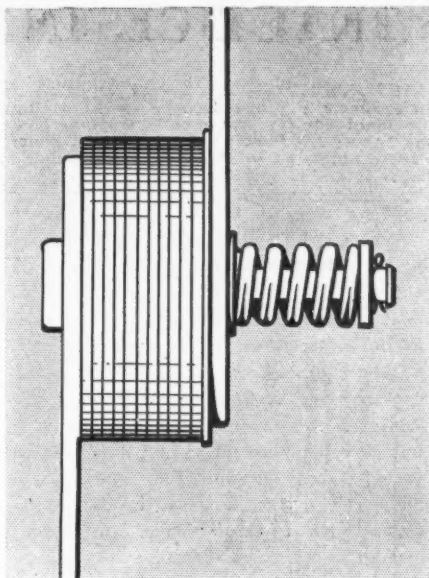
The makers of shock absorbers have evidently realized the arduousness of this service, because they have all redesigned along more rigid lines, and it is believed that this delicacy of adjustment is a condition of the past.

Shock Absorbers Not Cure-alls

There is one other point having bearing on this phase of the question that should not be overlooked. If a car is so badly designed that the springs will not take care of the downward motion, it will be futile to expect the shock absorbers to take care of the reverse motion. Shock absorbers are not intended as supports for structurally weak springs or as cure-alls in cars of a high center of gravity, excess top hamper, short wheelbase and high speed. A spring maker will not be able to furnish springs to satisfy a condition such as this, and, as before stated, if the springs fail there is no chance whatever of the shock absorbers succeeding.

Motorists are naturally curious to know which of the type of shock absorbers extant are the best suited to the occasions; they are prone to believe that there must be one best way. There never seems to be any one way that is better than a half-dozen others, unless all the conditions are previously fixed in view of that one way. The very fact that shock absorbers come as an afterthought would rather preclude the chance that they could have any fixed bearing upon the previous conditions as established upon the designs of cars. If cars are designed or constructed without taking the shock absorber question into account, then it is fair to assume that of the types of shock absorbers available that some one of them may be suitable to the occasion, all things considered.

In the selection of shock absorbers for cars that are constructed independently of them, it becomes necessary to consider the car performance. If the springs proper



LAMINATED DISK SHOCK ABSORBER

are sufficiently supple initially, and will not permit the body to contact with the axle under severe conditions, thus limiting the performance to be corrected to excessive rebound; in such a car the reactive members might be limited to a gradual snubbing action above the static level. On the other hand, if there is an excessive vertical bounce and a series of oscillations, the shock absorbers might well be of the drag class, snubbing the action of the springs above and below the static level.

LIGHT AT NIGHT FOR REPAIRS

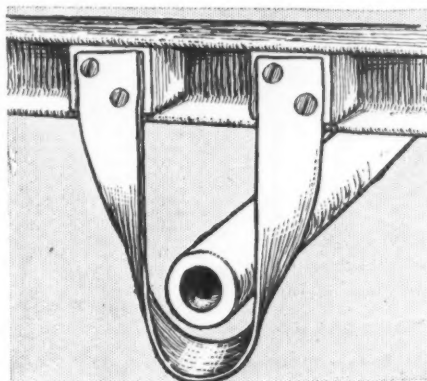
Motorists who drive much after dark must of necessity provide themselves with means for illumination in case ordinary road repairs become necessary, such as tire changes, valve replacements or correction of ignition troubles, or flushing a clogged carburetor. For small work nothing is so handy as the ordinary electric flashlight, but to get satisfaction from these devices it is necessary to carry a spare battery, also a spare lamp smaller than the one suitable for a fresh battery. A more satisfactory arrangement is a battery lamp in a suitable holder connected to the battery by a length of flexible cord. Such a lamp may be more powerful than that in the ordinary flashlight. Nowadays small tungsten lamps are coming into use in place of oil side lamps. If a spare length of cord is carried with suitable connection at the ends, one of these tungsten lamps can be detached and used with much greater satisfaction than either of the devices above mentioned. Any form of electric lamp has the advantage that by its light the carburetor may be tinkered with without danger of fire. This is not true of oil lamps, which, however, are sufficiently serviceable for work where gasoline is not involved. Best of all, one of the gas lamps may be taken off its bracket and connected to the generator.

When cars are in the process of design, it is quite possible to eliminate the need of shock absorbers to the extent they are required in some examples of design. This is not to say that the shock absorbers could be eliminated, or that it would be desirable to eliminate them, any more than it would be a good idea to reduce motor cars to their simplest form. The fact that shock absorbers are used, and the further fact that they serve a useful purpose is no license to design cars so badly that even good shock absorbers would fail to can the oscillations.

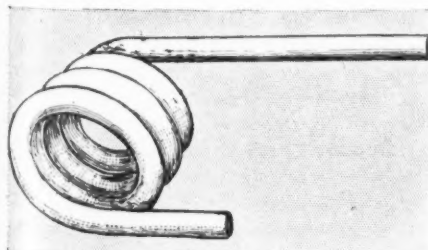
Plea for Better Materials

The success that has attended the shock absorber zone of activity is, despite the use of inferior materials in many cases and frightfully sloppy methods of applying the devices to cars. When the shock absorber interest more fully realized the terrific strains that shock absorbers feel heir to, they did move up, and they did correct more glaring faults with rather a good showing of promptness. On the whole, however, the material used in shock absorbers and the manner in which the materials were applied did not reach the high plane of motor car design for a long time. It was the lack of appreciation of the work shock absorbers had to do that retarded their progress to a marvelous extent, and it is because they have intrinsic value that they survived. There was a time when motorists preferred to wrap their springs with Sampson cord rather than be beguiled into fancied security by adopting shock absorbers that would not stay in place.

Fortunately, the situation developed a certain stability because of the underlying merit of the theme, and the various types of shock absorbers are now to be had in much more stable form. It is not believed they have reached the limit of possible improvement, although they probably are on just as high a plane as any other branch of motoring at the present time. There may be a little room for improvement by way of better spring materials, more permanent friction members and more secure blocking devices, but the latter part of this suggestion is open to the whole car, and not limited to shock absorbers.



LEATHER LIMIT STRAPS



SPRING SHOCK ABSORBER

COOLING IN WINTER A SERIOUS PROBLEM

YEAR after year, as winter comes on, the question of the freezing of the cooling water is discussed anew. It is a serious matter and a feature in motor-ing that will ever have to be dealt with, unless perchance oil or some other medium will ultimately be found to displace water, in summer and winter alike. A perfectly satisfactory cooling medium would have properties as follows:

The specific heat would be that—or near—water;

The specific gravity would be that—or near—water;

The mobility would be nearly constant under all conditions of temperature;

The solution would not support electrolysis;

There would be no separating out of the components;

Precipitation would not take place at any temperature;

The boiling point would be that—or greater—of water;

The solution would be neutral as respects its reaction;

The rubber hose joints would not deteriorate in contact with the solution;

The metals would not deteriorate in contact with the solution;

Non-inflammable or nearly so.

Water answers all these requirements, excepting that its boiling point is a little lower than it ought to be for the best results. The best thermal efficiency of a motor will be when the jacket temperature is somewhat above the boiling point of water; there is not therefore quite sufficient margin, and the water is boiled off too easily.

High Boiling Point Good

Water is non-inflammable, and that is more than can be said for most oils. Light mineral oils, on the other hand, possess the high boiling point, so much to be desired, and the oil would therefore not waste away. Just how efficient this oil would be for the purpose is a matter that has not been settled conclusively, although some work has been done along this line and the author is using oil at the present time.

In the meantime it will be well to go over the whole matter the extent possible, in the light of present knowledge, rather with the hope of benefiting the many who come into the field with their first winter experience as yet in the embryo. Of the media at present used, there is alcohol, glycerine and solutions of calcium chloride. Water is used with all of them, and in general, it is proper to say, the more water used the better if the solution will not freeze.

Water and Glycerine

These solutions work very well indeed, although it is true that the glycerine does attack the rubber hose joints, but not so

rapidly as to become over-troublesome. The chart, Fig. 1, gives the freezing points for the several mixtures of glycerine and water, and, as will be noted, no solution is considered above 25 percent of glycerine—by weight—for the reason that, as before stated, the more nearly pure water is the solution the better, all things considered. It has been found that 25 percent glycerine will serve in such weather as is experienced in New York. The author has used this solution and without any freezing trouble at all through three winters. The solution will thicken up, but it will not solidify, and unless it does it will not disrupt the piping. The "slush" formation goes through a gear pump with apparent ease, and that is probably the most troublesome point in the circulation system.

If the system gets hot, it is water that boils off, and to replace the same is all

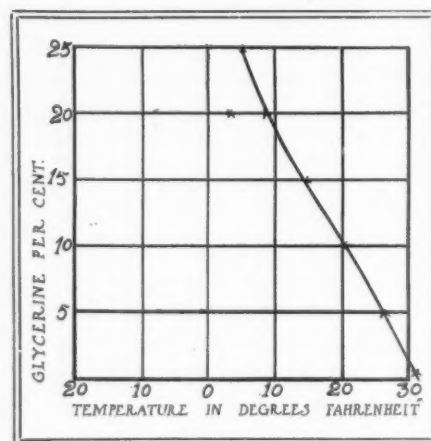


FIG. 1

that has to be done for, say, 3 months. After a time the solution loses all semblance of its original balance, and to start over again, with a new solution, is the wise course.

Wood Alcohol and Water

Wood alcohol differs from glycerine in one very essential particular in that it is the wood alcohol that boils off instead of the water. This is a misfortune, since wood alcohol answers every purpose in every other way. True, there are impurities in some grades of wood alcohol that under certain circumstances can do damage. With the low percentages, used in cooling and at the temperatures that prevail, it is not believed there is any danger from the use of this product in cooling work.

Fig. 2 gives the freezing point of solutions of water and wood alcohol, in which the alcohol is referred to in percent, by weight. The balance of the solution is pure water—hydrant—and it will be understood the mixture will have to be adjusted at frequent intervals. The wood alcohol will soften the rubber hose joints,

rather slowly, so that it differs only in degrees from the glycerine in this respect.

A Three-Fold Solution

Since either one of the ingredients added to water will lower the freezing point it is a fair inference that they combined would do the same thing, each in its proportion to the water present—allowing that there is no chemical combinations—they being merely intimate mechanical mixtures. Assuming that the wood alcohol is to be preferred on some counts as less liable to choke up the constricted passageways, then it is well to consider the advisability of reducing the quantity of glycerine and substituting alcohol instead. It is very likely that by the use of both wood alcohol and glycerine, the total quantity of water can be increased, and this is a step in the right direction on two counts, that is, cost and stability.

With 10 percent of glycerine in the water, the freezing point is 20 Fahrenheit. This leaves ninety parts of water, to which add alcohol, in amount equal to the glycerine added, plus excess alcohol solution to make up for water in the same—say, 10 percent—and the effect of the alcohol present will be to lower the temperature $13\frac{1}{2}$ degrees Fahrenheit. The result will be a mixture, with a freezing point slightly below zero, with improvements in other ways besides. This solution then would consist of 10 percent glycerine and 11 percent of wood alcohol, in which 10 percent water will be found.

This solution would still serve fairly if through lack of attention all the alcohol were to escape. The glycerine, then, would be as a safety medium and might be of great advantage on that account. On the other hand, to be rid of over half the usual amount of glycerine used is a positive advantage.

Calcium Chloride and Water

Of this material and its uses but little has been said, excepting that it should be chemically pure. Its performance in the cooling system of motor car motors has not been commented upon at any great length, and experience is wanted. Even if it is chemically pure, this is not to say there will be absolutely no electrolytic action. To what extent these salts will precipitate is a matter that should receive some consideration. The average thermo-syphon system is ripe for precipitation of the salts of metals suspended in water. The reason for this lies in the fact that the precipitation takes place at certain temperatures below the boiling point of water, and it is the thermo-syphon system that affords strata of water at several levels of temperature. In the thermo-syphon system the water is steaming where it contacts with the hottest zones around the combustion chamber, and the rather sluggish movement of water tends

to support precipitation in the systems.

The efficiency of the phenomenon called emissivity will be low, if the surfaces are coated with a crust of any kind, as salts of metals. Sodium chloride has not been proposed for the purpose, although it will lower the freezing point of water almost as well as calcium chloride. As a matter of fact, 15 percent of sodium chloride—common salt—gives a temperature of freezing of 12.2 degrees Fahrenheit, whereas the same percentage of calcium chloride affords a freezing temperature of 15 degrees Fahrenheit. Beyond this degree of concentration the calcium has the most marked effect, but it is positively a hazard to use a more concentrated solution.

Common salt is cheap; that is one thing in its favor. Electrolytic action would follow its use, but this is true of all such—metallic—salts. It would not be possible to eliminate the action by using chemically pure salts, for in battery work the salts are chemically pure, the object

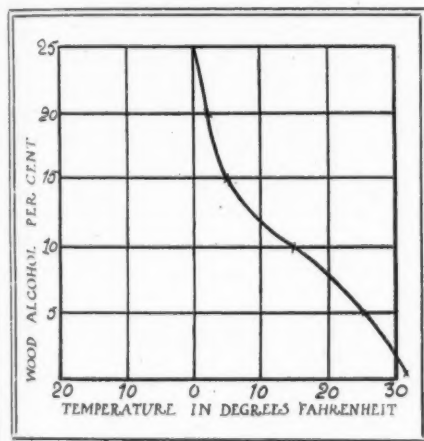


FIG. 2

being to eliminate other than desired electrolytic phenomena.

Electrolysis in Radiator

Radiators are costly, delicate and composite in construction—that is to say, there are a plurality of metals in the make-up of radiators, hence electrolytic action would follow, due to the difference of potential natural to different metals immersed in a saline bath. Fig. 3 shows the freezing point of calcium chloride, of the several degrees of concentration up to a saturated solution. It must be remembered that the saturated solution is ascertained at 60 degrees Fahrenheit, and increasing the temperature increases the capacity of the water to hold in suspension the salts. Any approach to the saturation limit then is attended by danger of precipitation. On the other hand, the Ohmic resistance of solution is lowest at about half saturation. In the long run it is experience that counts, and it is still a question as to the extent to which saline solutions can be used with safety. No motorist cares to do the experimenting if

his radiator is to be the "dog to try it on." There is no other point against saline solutions, especially common salt. Cast iron undergoes a change in its structure when it is immersed in salt water. The castings seem to rot.

From what has been said there would seem to be no solution so good as water, but unfortunately water will expand when it freezes, and it will freeze, on small provocation in a radiator. The efficiency of this device is a guarantee that the necessary heat exchange will take place, with a small difference in temperature below 32 degrees Fahrenheit.

Cool by Oil

Of this liquid for purposes of cooling there are points in its favor that render it even more efficient than water. In the first instance, oil has a higher boiling point—about double—than water, and as a result the oil will not waste away. The heat exchange takes place at a higher temperature, and the thermal efficiency of the motor will therefore be higher. The cooling system can be with less surface, hence lighter, and the work of the fan is of less importance. As a general proposition, oil will absorb heat in the ratio of ten to seven, as compared with water, and too with half the drop in temperature, which is at a saving of cooler surface. On the other hand, the oil works at a higher heat level, which is the secret of the better heat exchange for a given radiator surface.

Of course, very soft solder for the joints of radiators might melt out were oil used, should the heat balance take place at a fairly high level of the temperature. Solder can be so soft as to melt in boiling water.

Radiator Efficiency Varies

In a given radiator the temperature of the heat balance depends upon the efficiency of the radiating surface, and upon the extent of that surface. Radiators differ as much as 100 percent, as respects efficiency of the surface, and in cases in which water boils off alarmingly it is always a good possibility that the oil will work without giving trouble of any sort, if indeed the power of the motor is not actually increased.

Air-cooled motors are efficient in the use of fuel, because the heat abstracted through the cylinder walls is low, in comparison with the heat "sponged" off the surfaces by cooling water. The air-cooled motors, on the other hand, have unequal temperature zones. Oil cooling stands as a happy medium in that the inequalities are leveled, and the adjacent zones are of a common temperature—lower than in air-cooled motors, at a higher heat level than in water-cooled motors.

With oil, the circulating pump should be of greater capacity than it is in some examples of pumps to be seen on cars. On the other hand, "leakage" with oil is

lower than with water. The oil packs the pumps. One more point: The oil kills pump noise and profusely lubricates the pump, and, again, should there be a small jacket leak to the cylinder, it would not be of such great consequence, although a leak of any moment would cause excess pressure and "spotting" in the cooling system.

Grades of Oil To Use

This is a matter that can only be put in abstract terms. Oil is subject to a great variety of substitutions, and reliance must be placed in the refiners. Any refiner who will study the conditions and fairly meet them will be justly rewarded. The oil should have properties as follows:

A constant mobility under the several conditions of temperature; the minimum body; the highest possible specific heat; the highest possible boiling point; the highest possible flash point; no acid reaction whatsoever; fair lubricating properties; a stable chemical state of equilibrium,

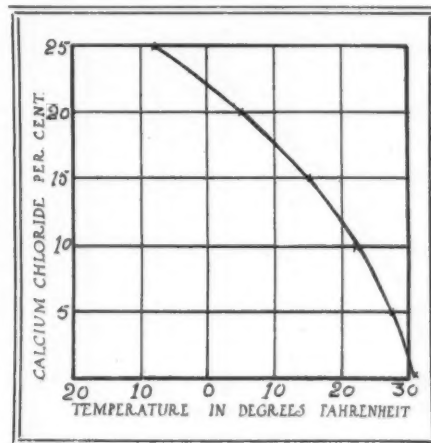
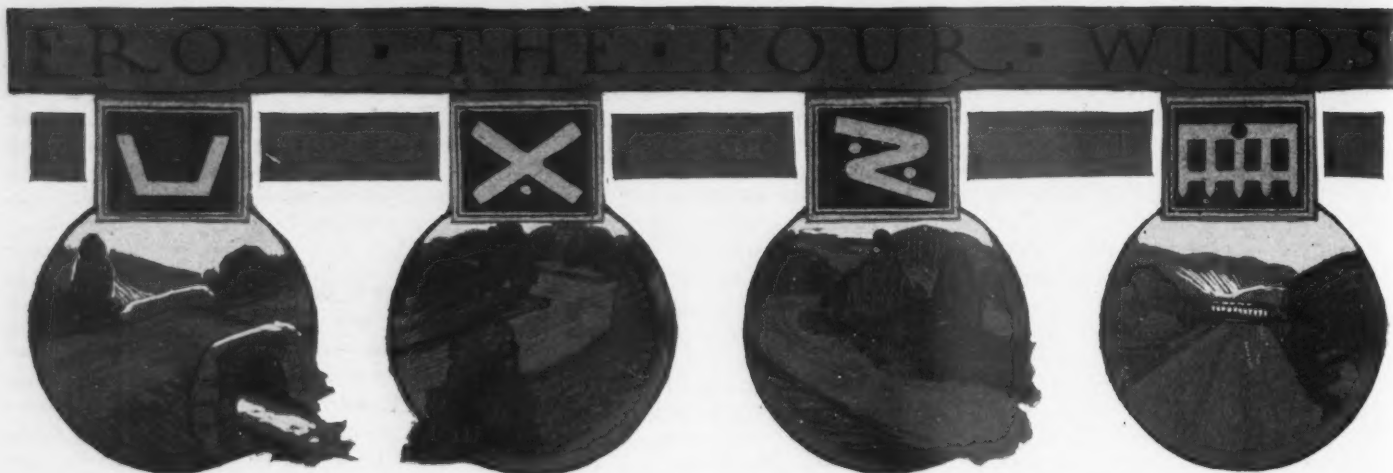


FIG. 3

under the conditions of service; absence of rosin or gum of any sort; free from jelly formation; low priced.

Of the oils to be had it would seem as if a light, thin, pure mineral oil would be the most reliable, in most, if not all respects. Animal fats become rancid under certain conditions and acid in time. Vegetable oils are prone to the same tendencies. Fish oil would be worth trying, merely as an experiment.

In any case the "overflow" pipe from the radiator should not lead to a point adjacent to lamps, or any other source of flame, for, should the oil reach its boiling point, the vapor would ignite readily and this is something to avoid. To be sure, oil is now used extensively in motor cars, and it does not add to the fire hazard perceptibly when compared with gasoline, which is handled with great safety. At all events, it will be well to stick to water rather than to take all the brands of oil that can be had upon paying the price. The oil man has oil to burn, but the man with a motor car can scarcely afford to add fuel to the flame.



INTERNATIONAL WARNING SIGNS RECOMMENDED FOR ADOPTION BY THE ROADS CONGRESS AT PARIS

In the above illustration the first picture on the left hand side represents an obstacle on surface of the road such as cross gutter, hump, etc.; the second, cross roads; the third, indication of sharp turns, showing exact nature of danger; and the fourth, railway crossing, gates and similar obstructions.

Chauffeur's Bureau Planned—A movement is on foot among the members of the Automobile Club, of Hartford, to establish a chauffeurs' bureau.

Another Glidden Trophy—Colonel George Studebaker, of South Bend, Ind., suggests a non-repair competition in connection with the next Glidden tour and as an incentive he offers a trophy valued at \$5,000, to be known as the Studebaker gold cup, to be contested for by any or all entrants, with roadsters and touring cars competing on an equality, and there being no price or power conditions. Rules and conditions will be left to the judgment of the A. A. A. touring board. Colonel Studebaker suggests that bonnets and tool boxes be sealed and observers' reports carefully studied.

Club May Use Traps—The Syracuse Automobile Club has placed itself on record with the American Automobile Association as being strongly opposed to speeding and reckless driving. It is not going to be content with this action alone but will endeavor to place the responsibility where it is said to belong, upon the motorists of other states. These, it is said, do not evidence any desire or inclination to observe the Syracuse speed laws. There is some talk of establishing official club speed traps, in case the appeal to motorists to use the roads in a safe and sane manner proves futile.

Railroads Grant Concessions—The traffic department of the N. A. A. M. has again been successful in obtaining concessions of great importance to all members. At a meeting of the southern classification committee, held at Cincinnati, at which the N. A. A. M. was represented by Mr. Marvin, manager of the traffic department, important favorable changes were made in the southern classification. The southern classification governs rates in the southern states south of the Ohio and east of the Mississippi river. It also, in certain instances, governs the through rates to points in the south from points in Central

Freight Association territory, lying between Buffalo and Chicago, and the rates from points east of Buffalo on shipments routed via Southern Despatch lines.

Will Demonstrate at Show—The American Motor Car Manufacturers' Association, under whose management the Grand Central palace show will open New Year's Eve, has announced that cars will be demonstrated as usual. Dealers and buyers from the Atlantic to the Pacific practically demanded that this time-honored custom be continued at the show. Business houses that buy commercial vehicles, purchasers of taxicabs and pleasure car owners all joined in the demand for demonstrations.

Rules Against Brick Roads—The proposition to build brick roadways into the country, throughout the state of Indiana, is probably doomed. A legal opinion has just been made by John Ruckleshaus, attorney for Marion county, in which Indianapolis is located, to the effect that brick roadways cannot be built under the 3-mile road law. Ruckleshaus holds that the law provides that bonding shall be only for free gravel roads or macadamized roads. Petitions had been filed for a brick roadway on part of the national road out of Indianapolis, and similar petitions have been filed in all parts of the state of Indiana.

Chicago A. C. Election—The annual election of the Chicago Automobile Club was fiercely contested, there being three tickets in the field, the third and last one, the opposition, sweeping everything before it, electing every one of its men. The results eliminated from the board of managers such well known motoring lights as Sidney S. Gorham, Burley B. Ayers and Charles E. Gregory. The new list of officials is as follows: President, Ira M. Cobe, re-elected; first vice president, T. J. Koehler, re-elected; second vice-president, T. J. Hyman, re-elected; secretary, C. A. McDonald; treasurer, George S. Whyte; directors, Joseph F. Gunther, re-elected;

John Farson, re-elected; Claude Seymour, re-elected; Ban B. Johnson, Allan S. Ray and F. W. Blocki.

Favor Short Tours—When the tours committee of the Automobile Club of Maryland reported a number of interesting trips made by several members it became known that the majority of members is decidedly against lengthy tours. Most of them declared they favored shorter runs which would allow time for a good dinner and a rest and chat before resuming the journey home. It is more than likely that shorter trips will prevail in the future.

Maryland Will Fight Tax—In order to successfully oppose the movement of Governor Crothers and the state motor car commission to impose a burdensome tax upon motor car owners in Maryland, the Automobile Club of Maryland intends to enlist the services of all owners in the fight. The club will send circular letters to these owners calling upon them to co-operate with the club against the proposed tax and to become members of the motor car organization.

This Is From Georgia—If this story is true then fiction is absolutely out of the running. Anyway it has appeared without apologies in several Georgia papers and is presented for what it is worth, as follows: The engineer of a Seaboard freight engine was slightly startled at Elberton, Ga., one night last week while running at good speed to observe a man, dressed in full motor regalia, climbing back from the front of the engine toward the cab. Investigation proved this to be Dr. A. S. Oliver, of Elberton, and more careful search revealed Dr. Oliver's young son and a full grown motor car plastered on the front of the engine—and neither in very bad repair. It seems the engine had run into the motor car. By chance the machine was picked up on the cow catcher and neither car nor occupants were badly hurt. The engineer did not notice that he had picked up a couple of unwilling pas-

sengers and did not find out what had happened until Dr. Oliver climbed back into the cab.

Wilkinsburg Election—The Wilkinsburg Automobile Club, of Wilkinsburg, Pa., elected these officers last week: President, Dr. W. R. Stephens, who has served in the capacity 2 years; secretary, Dr. W. C. Cook; treasurer, S. L. Smith. The club has secured fine quarters at 816 Wood street and will furnish them elaborately at once. One of the features of this winter's entertainment will be an orchestra of at least ten pieces, which will be organized among the members of the club.

Mayor of Right Sort—Mayor A. J. Horlick, of Racine, Wis., whose fame is based partly on malted milk and partly for his work in advancing the motor idea, has given another proof of his generosity. Insurance underwriters demand that Racine have a more efficient fire department. Mayor Horlick immediately recommended that a car be purchased for the fire chief, and promised that if the city did this he would donate a like machine for use of the police chief. His offer will be accepted.

Adds Six to Board—The membership of the Milwaukee Automobile Club has become so large that the board of directors has been increased from nine to fifteen members. The six new directors are: George C. Forgeot, Alfred Kieckhaefer, 1 year; George A. West and Oscar F. Fischedick, 2 years; M. C. Moore and O. Z. Bartlett, 3 years. The committee appointed to have charge of the matter of building a clubhouse consists of Clarke S. Drake, George A. West, C. W. Norris, Lee A. Dearholt and M. C. Moore. Sites are now being inspected.

Prove Motorist Innocent—The habit of some persons to pounce upon the motorist for many things of which he is innocent was given a hard blow at LaCrosse, Wis., last week, when a circuit court jury acquitted Harry L. Colman of the charge of running down Mrs. Naomi Crocker, who has sued him for \$5,000 damages. The plaintiff's case had no legs on which to stand, for every witness testified that Mr. Colman's car was yards away when she was injured, and that a street car had wrought the injury. The LaCrosse Auto-

mobile Club stood back of Mr. Colman and succeeded in gaining many friends for the motor car by showing up the flimsy character of the charges.

India Progressive—The increase of motor cars throughout India and the need of qualified drivers for them suggested the desirability of giving thorough instruction in this line in the Bengal civil engineering college, at Sibpur, which was undertaken nearly a year ago. Now the government of the United Provinces has sanctioned a whole-time instructor in motor car work and management of such cars in the Roorkee civil engineering college, in that province.

Bay State Prospering—The Bay State A. A. has changed the date of its annual meeting from the first Monday in January to the fourth Monday in the same month. This was done because many of the members will be at the shows in New York. Since the club has moved into its new quarters it has assumed a more lively air and the members flock there in larger numbers every day. No one seems to know who will be the next president, and there does not seem to be any candidates in the field at the present time.

Doctor Scouts Yarn—A recent cablegram from Paris said that a prominent American motorist had been removed to a sanitarium in France, a victim of spinal meningitis. This was brought on, his French physicians were reputed to have said, by excessive motoring. In order to test the truth of the matter as far as possible two Pierce-Arrow testers, Edward Retling and George Ulrich, were sent to Dr. E. R. Linklater, of Buffalo, by the Pierce company, and subjected to a thorough physical examination. Both Retling and Ulrich have been testing Pierce-Arrows since 1901. Factory records show that both men have averaged slightly over 125 miles a day since January 1, 1901, which would place their total mileage at approximately 356,875, which is regarded as much greater than would be attained by any man who toured merely for pleasure and then only a portion of the year. At the conclusion of the examination Dr. Linklater pronounced that both were in splendid physical condition. Neither, he said, was in a condition that would make

him any more susceptible to spinal meningitis than the ordinary healthy mortal who had never traveled in a motor car. "As far as motor car riding being responsible for acute spinal meningitis—there is nothing to that," the doctor said, "since it is an infectious disease and, if anything, riding a great deal in the open air would have the effect of bracing the system and making it better able to withstand the inroads of that or almost any other disease."

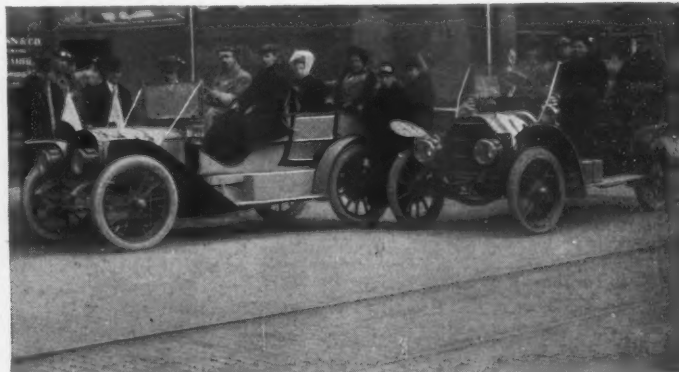
Death of G. A. Burnham—George A. Burnham, general factory manager for Morgan & Wright, of Detroit, was accidentally killed while duck hunting at the St. Clair flats, near Pearl Beach, Saturday. Mr. Burnham was out in a boat and while trying to put his gun back of him a cartridge exploded, the load entering the neck at the base of the skull. Mr. Burnham was 34 years of age and had been in the employ of Morgan & Wright since 1893 with the exception of 1 year during the Spanish-American war. He left a widow and three children.

Climb at Baltimore—The first hill-climb to be held under the auspices of the Automobile Club of Maryland is scheduled for Saturday. Belvedere avenue hill, from the Falls road to Roland avenue has been chosen as the place for the climb, which will be under the rules and with the sanction of the American Automobile Association. Nine events have been arranged. Classes G and H, in the broad definition, are open only for those owners who drive for their own pleasure. Flying starts, from a point to be fixed by the committee, have been decided upon.

Call for Engineers—In accordance with its custom, the Society of Automobile Engineers will hold its fourth annual meeting in New York city during the course of the shows. A dual date has been decided upon. The first sessions will be held Tuesday, January 5, adjourning to Tuesday, January 19, the first date falling in the week of the show to be held in the palace under the auspices of the A. M. C. M. A., and the second during the week of the licensed show at the garden. In addition to an interesting list of technical papers, the annual election for officers will be held at that time.



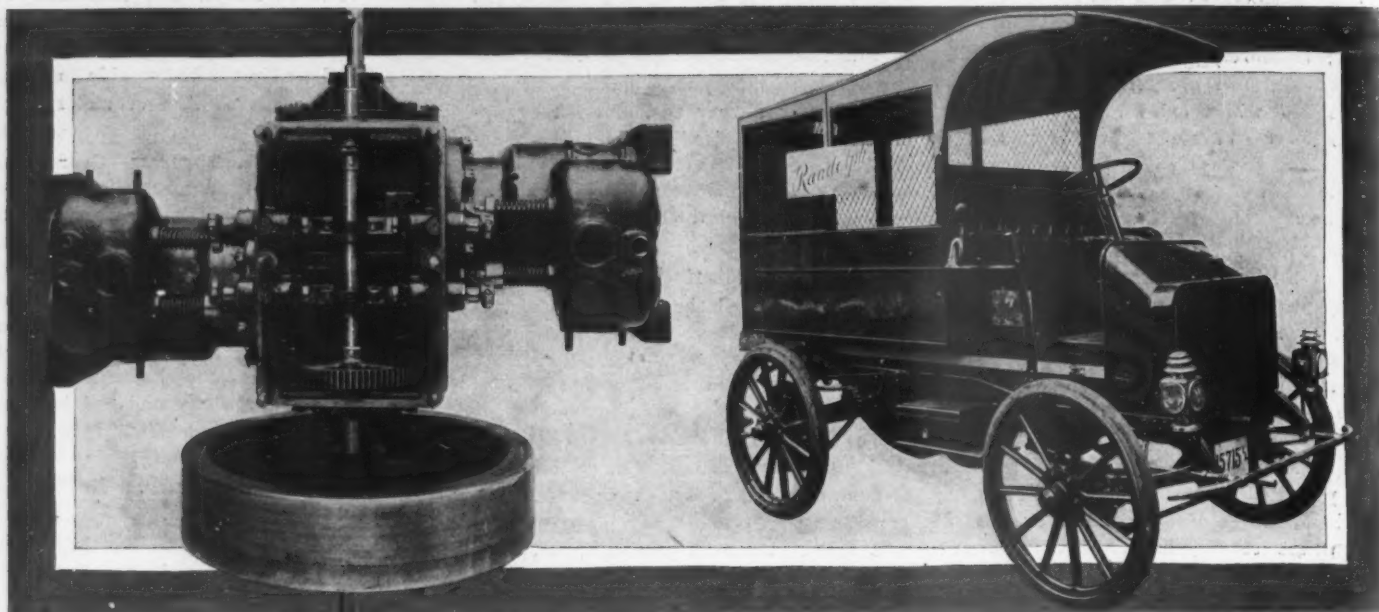
START OF TEAM RELIABILITY MATCH AT AURORA, ILL.



PRESIDENT EGERMANN, OF AURORA AUTOMOBILE CLUB, IN RAMBLER



The Realm of the Commercial Car



TWO-CYLINDER MOTOR EMPLOYED IN RANDOLPH CAR AND VIEW OF CAR

AN EVIDENCE of the activity in the commercial department of motoring is the marketing of the type B Randolph, friction-driven car, with a 1,250-pound load-carrying capacity, and manufactured by the Randolph Motor Car Co., Chicago, Ill. The Randolph is a very conventional machine, with its opposed water-cooled motor, located transversely in rear of the front axle. Behind it is the heavy flywheel to the rear of which extends a propeller-shaft carrying a large friction disk, this disk being slightly nearer the rear axle than the front. Back of the disk is the transverse jackshaft carrying the sliding friction wheel which contacts with the friction disk and has end sprockets for side-chain drive. The car is built with an 80-inch wheelbase, 34 and 36-inch wheels front and rear, carrying 2½ and 3-inch side-wire tires; and the tread is 55¼ inches to permit of the car using the street car tracks. In the running gear use is made of a channel pressed steel frame construction, the side members of which are dropped at the seat line to carry the motor. Large gusset plates are employed at the corners and frequent transverse members give the construction rigidity. The forward axle is a 2½-inch steel tubing fitted with drop forged nickel steel jaw endings to take the steering spindles which are fitted with Timken roller bearings. The rear axle is a 2½-inch steel bar and employs Timken rollers for carrying the rear wheels. Braking is through expanding sets within the rear wheel drums, and employ removable bronze facings against the drum. The front spring suspension is 36 by 2-inch semi-elliptics;

Randolph Delivery Car

the rear 38 by 2-inch full ellipsics, which carry the frame through trunnion supports at the top of the center.

In the 22-horsepower motor thermosiphon cooling is made use of by the employment of large hose leading direct from the waterjackets to the radiator. The cylinders have integral waterjackets and valve chambers, the latter on the upper side so as to make push rods and valve springs particularly accessible. The camshaft lies directly above the crankshaft and has double cams pinned into position. On the inner ends of the push rods are rollers for bearing upon the cams and on the outer ends of these rods are clamped offset pieces, the ends of the valve stems bearing upon the offsets. The pistons are ground and fitted with three compression rings and one oil ring and as a final bit of work cylinders, pistons and rings are lapped together. A hammer forged Vanadium steel crankshaft with ground bearings is made use of; and large-diameter, nickel alloy intake and exhaust valves are made interchangeable. Ignition is by jump spark system, with current from a 6-volt from 60-ampere storage battery and with coils and batteries carried in water-tight metal box on the running board. Within the crankcase is splash lubrication, but the main bearings and pistons are lubricated from a force-feed oiler carried behind the right cylinder and with sight feeds under the footboard. Patent oil cups are supplied to many other parts of the car. Motor control is through spark

and throttle levers beneath the wheel.

In the transmission use is made of an alloy friction disk which co-operates with the sliding friction wheel on the jackshaft. Changes in speed are effected by the side lever and contact between the friction disk and wheel by pedal. Bodies of different types are fitted but all attach to the frame by four easily-handled attachments, and there is nothing to interfere from pulling the body directly from the frame, which can be done by one man. To facilitate this work care has been taken to have the entire electrical connections and others free from the body.

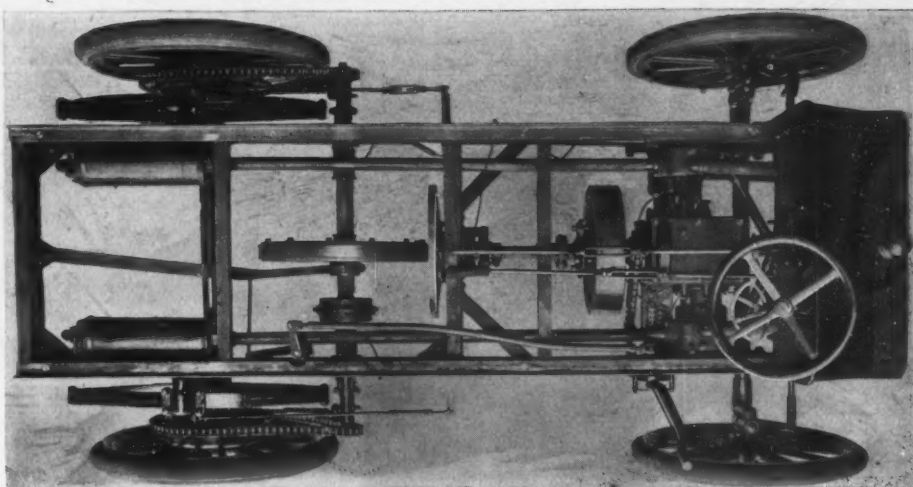
SHOE SALESMAN PROFITS

That "the world makes room for the man with an idea, especially if he loads his idea into a motor car and proceeds to carry it out," has been demonstrated by A. B. Brown, of Grand Rapids, Mich. Mr. Brown is a salesman for Hirth, Krause & Co., shoe manufacturers of that city. He has taken a list of towns, villages and crossroads stores in southern Michigan, which are far from railroad stations, and calls upon the trade with the aid of a Carter car. He has driven his machine over 7,000 miles in the last 6 months, and has thus been enabled to keep his sales up to the average, while business has been practically at a standstill everywhere.

"I have been a salesman for a number of years," states Mr. Brown, "and have traveled for our people, selling leather. I wanted to get to selling shoes and I wanted to sell in Michigan. There was no territory that was not already covered, was told me. I got to figuring. I believed

the company was mistaken. I secured a map and a gazetteer and proceeded to show them little dealers here and there. I proposed calling on them. The company was willing for me to go ahead. I secured a team of horses, a wagon and a boy to care for them, and got busy. Orders came and I made it pay. I could take lots of orders but they were all small. The only way I could increase my sales was to see more people. The only way to see more people was to get a motor car and travel faster. I put the matter up to the firm and made it see it as I did. The company bought a car for me and I drove it for one season. The car did not make good. It took so much time to keep it in condition that I could not sell enough shoes. I knew where the trouble was and induced the company to get a friction-driven Carter car for me. The friction drive was so simple that I could not see anything to get out of order.

"I cover Michigan, from lake to lake, and from Indiana to as far north as the Saginaw valley. I make the territory with my car about every 60 days. I never stop for the weather, but instead keep going back and forth whether the sun shines or not. When I drove the team and kept the boy, my expenses ran \$40 a week. With my car they do not average over \$20 a week. My repair expense for the season has been a trifle less than \$100, which includes two new tires which I have now. My car is far more reliable than a team of horses ever were. While no sale is large, I can call on a lot of small dealers in a short time and the total adds up nicely. The way I had the car fitted up was with the rumble seat removed and a case fitted on as shown in the illustration. This is fitted with drawers. Each drawer contains a certain class of shoes. If the dealer is interested in a certain line, I take that drawer into the store, and it takes about a minute



CHASSIS OF RANDOLPH FRICTION-DRIVE CAR

to show him the entire line. In 15 minutes I have the order, the shoes replaced and am bidding him good-day, with wishes for continued prosperity.

"It even beats traveling by train. I can get out as early as I please and when I am through there is no delay. I never have to wait for trains, baggage, trunks, expressmen; do not have any excess baggage, no hotel porters to bother with, and the minute I get my meal eaten I can be on my way enjoying my cigar as I go, instead of waiting for my team to rest. I firmly believe that it will be but a few years until farmers everywhere are using the motor car for all road work and will keep their horses for farm work only."

LECTURES ON BATTERIES

Renewed interest in the use of electricity as a motive force for commercial vehicles was apparent a few nights ago at a meeting held in the Massachusetts Institute of Technology in Boston. At the invitation of the Electric Storage Battery Co., of Philadelphia, a large number of

persons interested in the development of the commercial vehicle were present. The formal address was made by Bruce Ford, who explained in detail the exide battery. With the aid of stereopticon views Mr. Ford described the battery, its working and the best method to be followed in cleaning and renewing. The battery is adapted both for commercial and pleasure vehicles. Frank J. Stone, of Boston, also spoke, his talk being on the growth of the motor vehicle and the renewed activity in the commercial vehicle due to putting on the market a more efficient apparatus. He said a very important factor in the success of the commercial vehicle is to have the operator study his load. He emphasized the superiority of the electric vehicle over the horse on the score of cleanliness and health. William P. Kennedy, of the Studebaker company, of South Bend, was another speaker. He said he was "on the firing line" trying to overcome the prejudice against the use of the motor vehicle in place of the horse. He said he found few people who realized the costliness of horse transportation, and who believed the motor vehicle had passed the experimental stage. He said that once business men are shown that the difference in cost between the two methods of transportation favors the motor truck they adopt that method.

FOR YELLOWSTONE PARK USE

The days when only the six-horse stage coach is used for sight-seeing purposes in the Yellowstone park are nearing an end, at least the beginning of the end is in sight, and it is expected that within the next few years many motor cars will be introduced in the park for sight-seeing purposes. A pioneer in this respect is a 1909 Franklin which the Swendenman Automobile Co., Helena, Mont., has sold to H. W. Childs, president of the Yellowstone Park Transportation Co., for use in the park. It is expected that with the introduction of motor vehicles the frequent hold-ups will become a thing of the past, as it will be more difficult to hold up a car than horses.



A. G. BROWN'S CARTER CAR USED IN SHOE SELLING FIELD

AMONG THE MAKERS AND DEALERS



CHICAGO BRANCH OF AMERICAN LOCOMOTIVE CO. AT MICHIGAN AVENUE AND TWELFTH STREET

Putnam Selling Olds—Charles E. Putnam, formerly with the Corbin and Atlas cars at the factories in Bridgeport and Springfield, has now joined the Boston office of the Oldsmobile.

Moving to Clyde, O.—The chamber of commerce at Sandusky, O., has about completed the detailed arrangements for the removal of the plant of the Roberts Motor Co., of Clyde, O., to that city. Fifty employes and their families will go with the institution if the change is made.

Elmore Man For Vim—George Holloway, who for the past 16 years has been general superintendent of the Elmore company at Clyde, O., has associated himself with the Vim Motor Mfg. Co., of Sandusky, O., which makes the Vim two-cycle marine motors. It is proposed to make a two-cycle motor car motor in the near future.

Chicago Happenings—Joseph Libal, head of the Shenandoah Automobile Co., of Chicago; is now established in his new building at 1590-1600 North Halsted street, where he will conduct a garage capable of accommodating 300 cars. Andre Castelain has opened a garage in connection with his machine shop at 1446 Indiana avenue.

Moves to Troy, O.—The Stanley Automobile Mfg. Co., of Modreland, Ind., has moved its entire plant to Troy, O., in order to secure better facilities. It has consolidated with the Troy Buggy Works Co. at that place and will continue to manufacture Stanley motor cars in the name of the latter company, and on a much larger scale than heretofore.

Shanks Homeward Bound—Charles B. Shanks reached Minneapolis last week on his return trip to the coast, where he has been in the interest of the Stearns. He says that never in all his experience in the motor car business have the indications pointed to such a year as the coming one. He says strictly high quality cars will not be produced in sufficient number during the coming year. Everywhere he visited he found conditions very satisfac-

tory indeed, and already his company has booked more orders than ever before received by it.

Handling the Monarch—J. H. Kersten, of Minneapolis, has taken the agency for the Monarch car, which has never been handled in Minneapolis before, and has located at 24 North Eighth street.

Moline Engineer Weds—Eugene Gruenewald, superintendent and chief engineer of the Moline Automobile Co., of East Moline, Ill., was united in marriage on November 11 to Miss Pauline Haak, of Davenport, Ia., the ceremony being performed at the home of the bride's father in the latter city.

Great Western Agent—The Model Automobile Co., of Peru, Ind., has established a western distributing agency for the Great Western car at 1706 Main street, Kansas City, Mo. B. L. Colaw, who has been handling this car in Kansas City for the past 2 years, now has charge of surrounding territory as well, and is now devoting his entire time to the Great Western line.

Earl Reorganized—The defunct Earl Motor Car Co., of Kenosha, Wis., manufacturer of the Earl friction-drive cars, has been reorganized under the name of the Petrel Motor Car Co., and its product will be named the Petrel. Samuel W. Watkins, founder of the Beaver Mfg. Co., Milwaukee, builder of engines and motors, is at the head of the new company. The Petrel company will occupy the former Visible typewriter plant at Kenosha, the old home of the Earl.

Claims a Model Garage—Henry G. Goosman, who will handle the Glide cars in Minneapolis next season, has opened his Motor Inn on First avenue south. The building has a frontage of 55 feet and is 155 feet deep. The main entrance is patterned after a tire set up on the tread and the heavy door is operated by hydraulic power controlled from the offices. There is space for forty cars on the ground floor of the building, which is carefully heated throughout. There are many novel arrangements not often found in garage

buildings. There is a large retiring and dressing room for women. A large checking room is also operated for the owners who use the garage.

Slater Leaves the Trade—William J. Slater, advertising manager of the Firestone Tire and Rubber Co., Akron, O., has severed his connection with that company to take up the general management of the Kalamazoo, Mich., Telegraph, a newspaper in which he has recently become financially interested.

Remodeling Plant—The Cadillac Automobile Co., of Indianapolis, is remodeling its present building at 25 East Ohio street, putting in an entire new front. The company handles the Cadillac exclusively and Frank O. Fitton states he has closed twenty-six out of the thirty-five counties in his territory.

Will Make Parts—R. B. Jackson has resigned from the position of general manager of the E. R. Thomas Motor Co., of Buffalo, and has rented the old Northern plant at Detroit, at the corner of Champlain street and Canton avenue, where he will start in the manufacture of motor car parts within the next few months.

Bendix Moving—Articles of incorporation were filed in Indianapolis last week for the Bendix Automobile Co., which is moving its plant from Chicago to Logansport, Ind. The new organization is capitalized at \$400,000, with H. Clay Calhoun, V. Bendix and F. W. Patterson as the directors. Of the capital stock, \$75,000 of it was subscribed by citizens of Logansport, which was one of the conditions of the removal of the plant.

Will Make High-Wheelers—The Dowagiac Motor Car Co. is the name of the new concern recently formed at Dowagiac, Mich., to take up the manufacture of high wheel cars of the delivery wagon and runabout type. Articles of association have just been filed, the incorporators being M. A. Campbell, Clark S. Finch, Frank A. Lake, John E. Kaufman and Leon R. Lyle. The association is preparing to commence the manufacture of cars at the

Campbell & Fitch shop on East Division street. The capital is \$12,000, of which \$6,500 has been paid in.

Bald Changes—E. C. Bald, who was sales manager of the Crescent Automobile Co., of Pittsburg, until lately, has accepted the position of Pittsburg sales manager of the Mutual Motor Car Co., which handles the Stearns.

New Engine Plant Ready—The Davis Mfg. Co., Sixth street, Milwaukee, expects to occupy its new engine and motor factory on January 1. The company has orders for 1,000 motors, the majority of orders having come since election day.

Occupation Gone—David Henry and J. D. Porter, the only traveling salesmen employed by the Everitt-Metzger-Flanders Co., have both resigned from that company and accepted other positions because, it is claimed, the E-M-F output has been sold. Henry becomes sales manager of the Interstate Motor Car Co., and Porter has annexed himself to the Cleveland branch of the Studebaker Automobile Co., selling Studebaker-Garford and E-M-F cars in Ohio and western Pennsylvania territory.

Cleveland Picks Dates—At the annual meeting of the Cleveland Automobile Dealers' Co. a show committee was authorized by the organization to conduct the next Cleveland show. This is quite a departure from the method followed in former years, which has been that of engaging a manager. This committee consists of Hobart M. Adams, Clarence M. Brockway and W. D. Price, who will have in charge the entire detail and the entire management of the show, to be held during the week of February 22.

Anti-Squeak Springs—Warren S. Johnson, president of the Johnson Service Co., of Milwaukee, manufacturer of the Johnson gasoline and steam cars used by the government mail service in Milwaukee, has invented a device to avoid squeaky springs. It consists of building up the spring by putting thin sheets of steel between each leaf. The thin sheets are of the same size as the spring leaf, but have holes punched into them, which are filled with a thick lubricant and then bolted together.

Big Oldsmobile Staff—William T. Taylor, the new manager of the Philadelphia Oldsmobile branch, is building up a strong force of assistants to take care of the trade in the six states which comprise his territory. To handle the Philadelphia retail trade he has closed with Robert Skilton, lately of the Chadwick Engineering Works and the Quaker City Automobile Co., who will have as assistant Thomas Berger, formerly of the Motor Shop, and Charles W. Rudd and J. Radford, of Toledo, O., formerly connected with the Pope-Toledo factory. C. Robert Hoynes, formerly with the Motor Shop, assisted by Harry Walls, of the abandoned Philadelphia Rambler branch, will look after the

wholesale trade in the territory. The mechanical department of the Philadelphia branch has been placed in charge of P. E. Varney, formerly of the Motor Shop, while Daniel Webster will have charge of all the Oldsmobile garages in the city.

Old Company Revived—Harvey S. Haynes, brother of Mayor J. C. Haynes, announces that the Haynes Auto Co., of Minneapolis, which went out of business a year ago, will resume business and will handle the Welch, Pennsylvania and Regal lines. It expects to close for commodious quarters within a few days.

High-Priced Cars Popular—There are over 7,000 owners in western Pennsylvania. Nearly three-fourths of these have bought their cars through Pittsburg agencies. The most reliable estimate made on the average cost of these machines is \$3,000 each. While this seems rather high it is a well-known fact that in the big wealthy towns of western Pennsylvania cars selling for less than \$3,000 are a comparative novelty, as their buyers usually are very wealthy business men.

Panhard Using Knight Motors—The Knight engine will be adopted on some of the Panhard-Levassor models next season. Though it has been known that Panhard has been testing the motor for the past few months, the officials of the company persistently denied any knowledge of it, and only a few weeks ago declared that they would have nothing new for the coming season. As chassis fitted with the Knight engine have been seen on the French roads in the hands of testers, it became impossible to deny that it was being studied at the Panhard factory, and recently official announcement was made that the patents had been bought. It is not yet known on how many models the new engine will be fitted, or what modifications on Knight's original patent have been made. Each of the firms buying the patents is free to make whatever changes it may consider necessary, and it is certain that Panhard, like the others, will adopt certain modifica-

tions. According to rumor the Knight patents have been taken up in Germany by the Mercedes company, and in Italy by the Fiat firm. No official confirmation of this can, however, be obtained.

Takes Large Quarters—Urling & Co. have moved from 933 North Negley avenue, Pittsburg, where they have been located for several years, to much larger quarters at 6112 Broad street, East End. The Urling firm handles the Autocar and Corbin.

Willard in New York—The Willard Storage Battery Co., of Cleveland, O., has opened an office and battery depot at 1876 Broadway, corner of Sixty-second street, where it will take care of its battery business in New York and vicinity. The depot will be fully equipped with apparatus for assembling, charging and crating batteries ready for use. It also has arranged to take care of the charging of vehicle batteries and batteries for sparking, lighting and other purposes.

G. B. Adams a Cadillacer—George B. Adams has become connected with the Detroit-Cadillac Co., of 303 West Fifty-ninth street, New York. As far back as 1899 Adams occupied the position of president of the Adams-McMurty Co., which at that time held the agency for the Packard cars in New York. This agency was later changed to a branch, and Mr. Adams became the manager. Since that time Mr. Adams has been connected with the Pope and American Locomotive companies.

Four More Goodrich Branches—On account of the increased demand for Goodrich tires in the localities mentioned branch houses have been established as follows: Kansas City, Mo., 1728 Grand avenue, Fritz Oberhue, manager; Minneapolis, Minn., 827 Hennepin avenue, E. W. McCreery, manager; Pittsburg, Pa., 5900 Penn avenue, H. L. Bouker, manager; Atlanta, Ga., 64 North Pryor street, E. V. Wilkinson, manager. A complete stock of Goodrich tires and tire sundries will be carried at these branches.



HEADQUARTERS OF W. E. BUSH, LOS ANGELES, SOUTHERN CALIFORNIA PIERCE-ARROW AGENT



Development Briefs



THE HOBBS RADIATOR COVER

ONE-JET GAS BURNER

Simplicity of cleaning is one of the claims made for Steward's Dolan burner, handled by R. D. Bradley, 31 Wisconsin street, Chicago, the main feature of which is the one jet employed to give light. In appearance it somewhat resembles a gas burner, giving a broad flame through the one hole used, in which respect it differs from the burners usually found in the motor car acetylene gas lamps, which generally are of the prong variety. Simplicity also is claimed in the cleaning of this burner, a brush through the cleft in the tip doing the trick. This may be done with an old tooth brush if necessary, and it is said it is not necessary to probe the gas hole to restore the flame to its original size. The shell of this burner is of aluminum.

HAND-RUB MITTEN

Designed for use in the garage and useful in polishing brass parts is the hand-rub brought out by the Twentieth Century Mfg. Co., of New York city. It is made like a mitten and of canvas, with chamois fastened to the palm. It would be expensive to make this chamois lining of one piece of skin, so the manufacturer has utilized the odds and ends and in this manner the surface of the mitten is thoroughly coated with skin.

TO WARM RADIATORS

Cisler & Serson, Chicago, Ill., are manufacturing the Hobbs radiator protector, an invention of J. O. Hobbs, also of Chicago, and which is a covering designed to be placed over the radiator of a motor car in winter time, when the car is standing beside the curb, its object being to prevent freezing of the water in the radiator. The Hobbs radiator protector, while primarily designed to be coldproof, is also waterproof and very flexible, so that when not in use it can be packed away in the car.

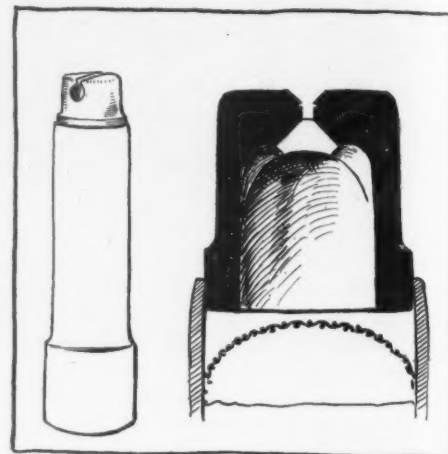
It is held in position by snap fasteners on either side and, while of a leather exterior, is lined throughout with thick wool felt. Its use will eliminate the necessity of throwing a robe over the radiator in winter weather. For extremely cold weather and in order to withstand cold for a considerable time, another cover, not illustrated, is made which fits over the hood extending from the radiator to the dash, and by which the complete motor is enclosed. This hood covering resembles the old application of the "hay stove," its value being to retain the heat within the motor by preventing its radiation.

SCREW DRIVER STANDARDIZED

Listening to the suggestions of the motor car trade, the Elmore Tool Mfg. Co., of Hartford, Conn., has devoted considerable time and thought to the production of a certain type and style of screw driver which is designed to be standard and capable of doing heavy work. The result is the Elmore drop forged screw driver, the main features of which are appearance, construction, weight and size. As might be imagined from its name, the entire driver, handle and ferrule, is drop forged and noticeable are the ribbed edges on all sides of the handle, which are designed to avoid cracks caused by the shrinkage of the wood scales, a fault which is common among many tools of this sort. Realizing that often a screw driver has to do duty as a hammer, the company has made the end very heavy and flat. The handle is oval-shape and on it are used hardwood oval scales, which are highly polished. The driver is made not only with different styles and lengths of blade, but is manufactured in several sizes of handles, from very small to very large and with round and square shanks necessary for all kinds of work.

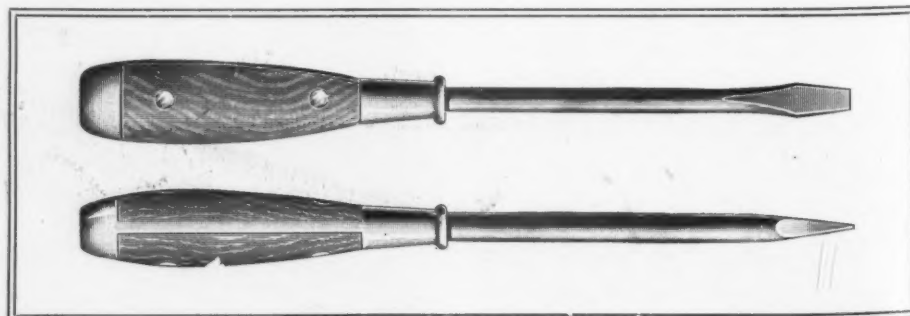
HELE-SHAW MOTOR CAR CLUTCH

No radical changes have been made in the Hele-Shaw clutch, which is manufactured for the American trade by the Merchants & Evans Co., of Philadelphia, although the licensee claims to have greatly lightened and refined it in its manufacture



DOLAN ONE-HOLE BURNER

as compared with the English product. The Merchants & Evans Co. has permanently adopted the use of the central spring type as against the multiple spring type of clutch because of its claimed greater simplicity and its easier adjustment. There are now twenty-six European makers using the Hele-Shaw clutch and who intend featuring it in their 1909 product, while in this country it has been taken up by several well known manufacturers, one of the latest to adopt it being the F. B. Stearns Co., of Cleveland, which intends using it in its 25-horsepower shaft-drive car. The Hele-Shaw clutch was illustrated in Thomas J. Fay's article on the "Utility of Clutches On Motor Cars," published in Motor Age October 29. As is well known, the clutch is of the multiple-disk type, differing from others in that the disks do not bear on their flat faces but have conical grooves that engage on their faces. The members are submerged in oil, but the action is such that the engagement is attended with much certainty and without evidences of fierceness. For a given motor, the clutch ability is said to be attended with but little pedal pressure. The actual contact surface is a maximum, while the effectiveness is multiplied through the angularity of the engaging faces of each disk in which is a circular corrugation.



ELMORE DROP FORGED SCREW DRIVERS